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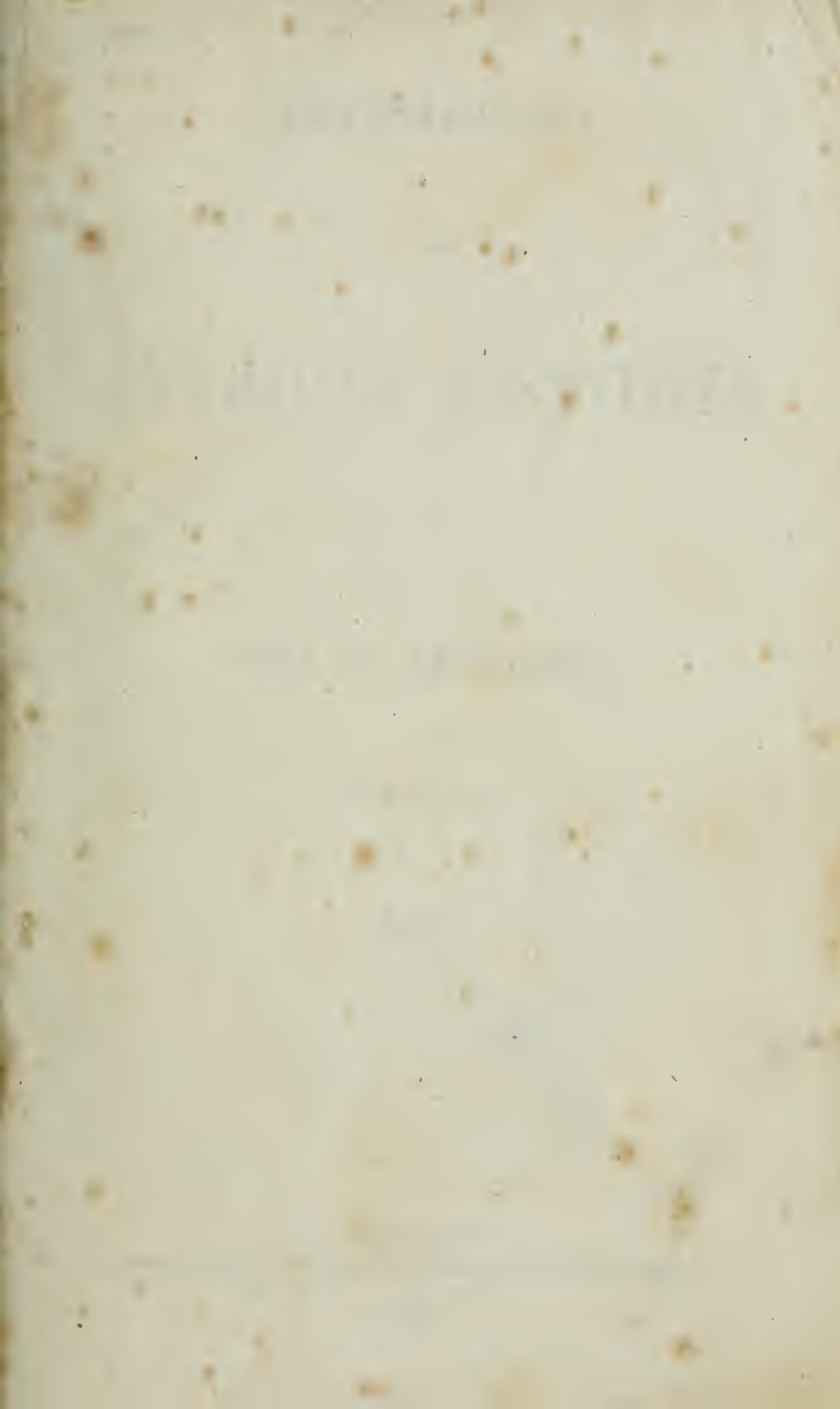
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11th annual report

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TRANSACTIONS

OF THE

AMERICAN INSTITUTE

OF THE

CITY OF NEW-YORK,

FOR THE YEAR

1852.

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ALBANY:

CHARLES VAN BENTHUYSEN, PRINTER TO THE LEGISLATURE.

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1852

AMERICAN INSTITUTE.

TRUSTEES AND COMMITTEES FOR 1852.

TRUSTEES.

JAMES TALLMADGE, *President.*

ROBERT LOVETT,

ROBERT L. PELL, } *Vice Presidents.*

GEORGE BACON, }

HENRY MEIGS, *Recording Secretary.*

ADONIRAM CHANDLER, *Corresponding Sec'y and Agent.*

EDWARD T. BACKHOUSE, *Treasurer.*

COMMITTEE ON FINANCE.

John Campbell,
John A. Bunting,
George Dickey,

George Bacon,
N. G. Bradford.

MANAGERS OF THE TWENTY-FIFTH ANNUAL FAIR.

Joseph Torrey,
James R. Smith,
Isaac V. Brower,
William Ebbitt,
John A. Bunting,
F. W. Geissenhainer, Jr.,
Peter B. Mead,
Paul Stillman,
Benedict Lewis, Jr.,
William Hall,
Edwin Smith,
Benj. Ayerigg,
John B. James,

Lewis G. Morris,
Richard M. Hoe,
George S. Riggs,
Patrick Henry,
George Harrison,
Jordan L. Mott,
Shepherd Knapp,
Joseph Cowdin,
George Dickey,
Thomas W. Harvey,
Joseph R. Taylor,
Jared L. Moore.

COMMITTEE ON AGRICULTURE.

Lewis G. Morris,
David Banks,
D. S. Gregory,

Robert S. Livingston,
James De Peyster.

COMMITTEE ON COMMERCE.

Freeman Hunt,
Nicholas Carroll,
Jonathan H. Ransom,

Jared L. Moore,
John Disturnell.

COMMITTEE ON MANUFACTURES, SCIENCE AND ARTS.

James Renwick,
T. B. Stillman,
D. M. Reese,

H. R. Dunham,
Edwin Smith.

COMMITTEE ON THE ADMISSION OF MEMBERS.

George F. Barnard,
John Gray,
Hiram Dixon,

William C. Arthur,
Ralph Hall.

COMMITTEE ON CORRESPONDENCE.

Benj. Ayerigg,
James Van Norden,
W. P. Schoals,

S. R. Comstock.
W. H. Browne.

COMMITTEE ON THE LIBRARY.

Ralph Lockwood,
Isaac V. Brower,
Alex. Knox, Jr.,

George Gifford,
Edwin Williams.

State of New-York.

No. 133.

IN ASSEMBLY, MAR. 22, 1853.

ANNUAL REPORT OF THE AMERICAN INSTITUTE.

NEW-YORK, February 1, 1853.

To the Hon. WILLIAM H. LUDLOW,

Speaker of the Assembly :

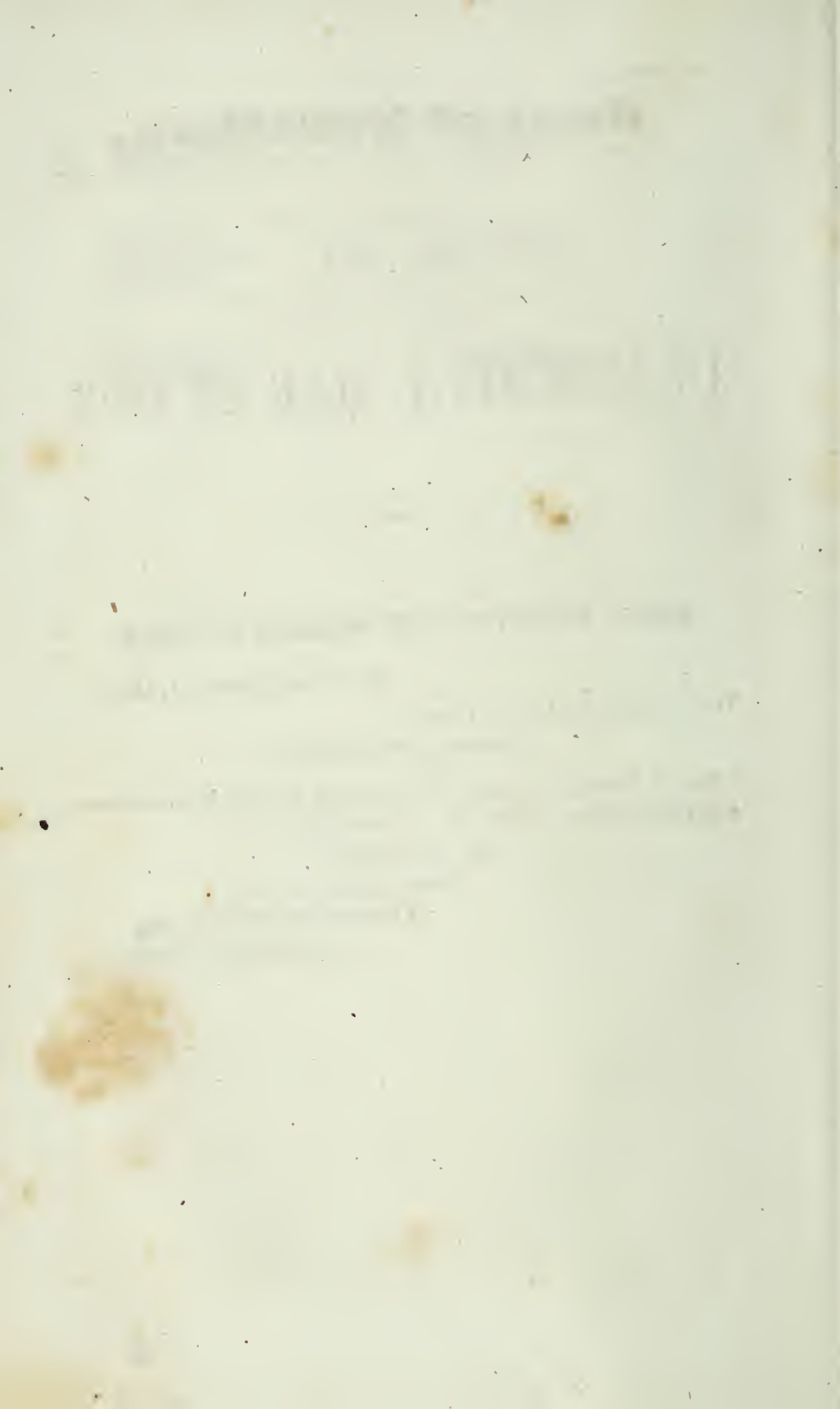
SIR—I herewith transmit the Eleventh Annual Report of the American Institute of the city of New-York.

Very respectfully,

Your obedient servant,

ADONIRAM CHANDLER,

Corresponding Secretary.



ELEVENTH ANNUAL REPORT

OF THE TRUSTEES OF THE AMERICAN INSTITUTE.

In compliance with the law passed May 5, 1841, the Trustees of the American Institute present herewith a report of their proceedings for the year 1852, containing detailed statements of their various exhibitions of useful farm stock, the agricultural productions of our State and the United States, of agricultural implements variously improved, and of the manufactures and mechanic arts of our country, as illustrated at our 25th annual fair, held in the city of New-York during the month of October last.

In the departments above enumerated, there were specimens presented from twenty-four States of the Union. In that of agriculture, we had specimens of Indian corn from fourteen States: Potatoes from ten States: Wheat from nine States. Ohio presented specimens of apples, pears, cheese, wine, potatoes, corn and wheat.

The cattle show, which took place at Madison Cottage, on the 20th, 21st and 22d days of October, was composed of stock from various parts of the United States, comprising, thorough-bred horses, horses for all work, and matched horses, in all numbering sixty animals. Of neat cattle, the native stock numbered ten animals; crosses between improved and native stock, thirty-two; Short horns, thirty-five; Devons, sixty-six; Ayrshires, sixteen; milking cows, nine; fat cattle, ten; working oxen, eight yoke; fat sheep, seven; long wool sheep, forty-eight; middle wool sheep, forty-six; merino sheep, thirty-one; Saxony sheep, seven; swine, eighty-three; Shetland mare-colt and stud, two; jacks, three; shepherd dogs, seventeen; total 493 animals. In

addition to which, there were forty-one coops of poultry, consisting of fowls of almost every variety—turkeys, geese, ducks, &c. The cattle show of 1852 surpassed any heretofore held by the Institute. The perfection and beauty of the animals very justly elicited general commendation. It is to be regretted that up to this time we have been entirely too limited in the space occupied by us for this important purpose. We have reason to hope that, through the liberality of our municipal authorities, this difficulty may in future be obviated, so that the many who take an interest in this exceedingly useful department of our annual fairs, either as exhibitors, connoisseurs or amateurs, will be accommodated with ample space.

That portion of our fair at Castle Garden, exhibiting the cereals and their various preparations, the productions of the dairy, garden*vegetables, the fruits and flowers, were all admitted to be of great excellence and beauty. A detailed description will be found among the reports herewith presented. Improvement marks the progress of the husbandman, to some extent, by the adoption of new methods of tillage. The application of fertilizing materials, founded on the developments of scientific investigation, is attracting increased attention. The introduction of under-draining, sub-soil plowing, irrigation, and the proper admixture of soils, are found to be helps of great importance, in some instances compensating for their cost in a single season, with accruing permanent advantages; thus bringing into productiveness, sterile fields and pestilential swamps, and restoring their vicinities to that healthfulness and purity necessary for the abode of man. It has come *now* to be a settled matter that, with a correct knowledge of the constituents of the plant and an analysis of his soil, the practical farmer possesses the means of determining, almost with certainty, the ability of his land to produce any desired crop, and how to return to his land the required ingredients, should analysis show them to be missing. Without this knowledge, it would seem that the practice of the farmer is a chance matter, founded upon no settled data or rationale.

Agricultural implements constituted an important and very interesting feature of the fair. So great a variety of useful and

highly finished instruments, admirably adapted to every purpose connected with agriculture, horticulture, floriculture, and pomology, has rarely been collected in any one exhibition in the United States. We shall name here only a few articles as of recent introduction or improvement, calculated to effect a saving in the labor of the husbandman, or to accomplish in a more perfect and economical manner important results in the management of farms, viz: mowing machines; mowing and reaping machines; mowing, reaping and raking machines; improved churns; cheese press; wire fence; cider mill and press; threshing and cleaning machines; draining tile; sub-soil plows, &c., particular reference to which will be found in our premium list or the reports which follow.

The machine department was unusually full, presenting specimens of the most highly finished and accurate machinery, together with inventions and improvements designed for the accomplishment of important utilitarian purposes. The press for space to exhibit moving machinery, induced the managers to enlarge this room by adding sixty feet to its length previous to opening the fair. The room is now 220 feet long by 25 feet wide, with a tight roof, admirably adapted for light and ventilation. It is furnished with a steam boiler of ample size, a twenty-five horse power steam engine, a line of shafting extending 180 feet, with counter-shafting, pulleys, &c. Excepting the necessary reservation made for the accommodation of visitors, which enabled them to view every thing with perfect safety, the room was filled with machinery, constituting an attraction of unusual interest. The space allotted to visitors, was filled by them almost every hour during the time it was open. Of new inventions, we will here allude to a few. Three machines for crushing hard substances were on exhibition, than which, up to the present day, no machinery has been more susceptible of improvement, or seems now to be in greater demand. Among them the quartz crusher, invented by Mr. John W. Cochran, appeared to be pre-eminent, reducing that material with astonishing rapidity to almost an impalpable powder, at a cost far less than any plan heretofore devised. A gold beating machine was exhibited in operation, by William Vine, Jr. This is the first attempt at making leaf gold

by machinery within our knowledge. Our judges passed high encomiums upon it; nevertheless, experience may develop defects which at present do not appear. It is certainly to be hoped that all difficulties may be remedied, since the present method of producing leaf gold, so universally in demand for ornamental purposes, is by manipulations of a very severe and tedious kind. Messrs. Brundred, Son & Co., of Oldham, N. J., put in operation a spinning frame, for the purpose of exhibiting a throstle constructed on a plan which dispenses with bands for the spindles, by introducing friction wheels. It attracted much attention, and our judges awarded to it the highest premium of the Institute. A card printing press, of new and excellent construction, by G. P. Gordon, New-York city. A machine for paging the leaves of blank books, by J. & W. McAdams, Boston, Mass. This machine operated with great precision and speed. A new dovetailing machine, by A. Davis, New-York city. A double steam condenser, by Joseph P. Pirsson, New-York city. The above were prominent among the articles of new invention in the machine department.

Of woolen, cotton and silk, and the various tissues formed of these materials, which were numerous and of excellent quality, we shall not attempt here a particular account, as in a subsequent part of this volume detailed statements will be found. It is gratifying to know that they were pronounced of very superior quality by competent judges, to whose particular examination they were submitted.

In the manufacture of edge tools of all descriptions, we now stand pre-eminent, nothing from abroad can compete with the productions of our artisans, either in quality or finish. From indications we have recently seen, we are induced to believe that the time cannot be very remote when the world will of necessity look to the United States for steel from our own native beds of ore, of a quality heretofore unknown and unequalled.

We find that, notwithstanding all the disadvantages under which our manufacturers and artisans have labored, such is their indomitable energy, aptitude, and perseverance, that they seem to be gradually overcoming all obstacles and making the products

of their skill and labor profitable to themselves and acceptable to their countrymen at least, in preference to similar articles from abroad, competing successfully with the foreign producers in price, and leaving them behind in the character of their articles, because of their superiority in style and finish, their better adaptation to the purposes required and their value in labor-saving. Let us ask, will our woodmen go into the forest with an axe made in Europe? Will our farmers prepare their fields with a foreign plow? Will they prepare for their harvest with scythes, cradles, mowing machines and reapers from abroad? Will our copper smiths and tin smiths look abroad for their tools? Will our house and ship joiners and builders look beyond home for their axes, saws, planes, augers, rules, nails, hammers, tacks, brads, bolts, locks, butt-hinges, door-knobs, stained glass, &c.? Will our tailors cut their garments with shears made in Birmingham or Sheffield? Who sends abroad to purchase a carriage or a piano forte? Our common laborers do not enter upon the toil of the day unless armed with a shovel made at home, of proper materials and form.

After watching with the most intense anxiety, the progress of our countrymen in the varied departments of labor and production; for the last quarter of a century, we have come to the conclusion that, at no very distant day the people of these United States will produce every thing which can be obtained through the agency of human hands, equal in price and in quality to the best products of the old world, no matter what may be the course of legislation, unless laws prohibiting the use and application of native skill and industry are to be enforced.

JAMES TALLMADGE, *President,*

ROBT LOVETT, *Vice President,*

ROBT L. PELL, “

GEO. BACON, “

E. T. BACKHOUSE, *Treasurer,*

H. MEIGS, *Recording Secretary,*

ADONIRAM CHANDLER, *Cor. Sec.*

Trustees.

NEW-YORK, December, 1852.

FINANCES.

The following is the financial condition of the American Institute on the 1st day of February, 1853 :

Balance in the treasury, February 1, 1852,..... \$2,569 00

The receipts of the year have been,

From managers of the 25th annual fair, \$10,447 77

Treasurer of the State of New-York, 950 00

Members, 2,265 00

Certificates of awards, 32 00

Subscription to library, 6 00

Sales of Transactions, 9 00

lumber used at 23d fair, .. 8 00

Knickerbocker and Howard Insurance companies, 10 00

R. W. F. (cash returned)..... 4 00

Rent of premises, No. 351 Broadway, from November 1851 to November 1852, 3,000 00

Interest on bonds, 466 67

\$17,198 44

Levinus Carkson, bond due January 1, 1853, 5,000 00

22,198 44

\$24,767 44

PAYMENTS.

Real Estate.

Interest on bond and mortgage, twenty-five thousand dollars, Nov. 1851 to Nov. 1852, \$1,625 00

Insurance on building, 139 55

Taxes, 471 20

New gutter in street, 8 50

Cementing roof and repairs, 19 25

Carried forward, \$2,263 50 \$24,767 44

Brought forward,.....	\$2,263 50	\$24,767 44
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Committee on fitting up rooms.

Carpenters' work,.....	\$30 35	
Plumbing,.....	64 50	
Painting,.....	28 73	
Repairs of gas and water pipes, locks, &c.,.....	9 22	
Stove for library,.....	25 88	
Clock and umbrella stand,....	8 25	
Plastering,.....	6 75	
New seating chairs,.....	5 25	
	<hr/>	178 93

Library.

Books,.....	\$809 81	
Periodicals,.....	111 16	
Subscriptions to newspapers,.	106 50	
Binding,.....	265 72	
Paper for catalogue and bind- ing,.....	82 00	
Paper for covering books,....	7 00	
Newspaper files,.....	8 70	
Pair of globes,.....	35 31	
Help in library,.....	13 75	
	<hr/>	1,439 95

Washington Monument.

Marble block,.....	\$125 00	
Expenses, freight, &c.,.....	23 12	
	<hr/>	148 12

Miscellaneous bills.

Expenses of Farmers' Club, Sec'ry reporting 20 meet- ings,.....	\$200 00	
Publish'g proc'dings,	175 00	
	<hr/>	\$375 00
Insurance on library and pro- perty,.....	62 00	
Stationery,.....	64 19	
Printing,..	9 00	

Carried forward,.....	\$510 19	\$4,030 50	\$24,767 44
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Brought forward,.....	\$510 19	\$4,030 50	\$24,767 44
Fuel,.....	45 00		
Gas,.....	76 65		
Advertising,.....	67 00		
Agent's expenses to Albany,.	28 00		
Freight,.....	8 88		
Funeral decorations of building—Messrs. Clay and Webster,.....	24 82		
Engraving duplicate medals,.	3 50		
Binding Transactions,.....	2 50		
Copying for do	11 00		
Repairs of stoves,.....	15 70		
Wood cut view of cattle gr'nd,	10 00		
Ice,.....	12 75		
Directories,.....	4 50		
Petty cash—postag's, cleaning, subscription to small papers, advertising, &c.,.....	251 62		
		1,072 11	

On account of the 24th Annual Fair, 1851.

Premiums,.....	\$145 11		
Painting,.....	12 94		
Keys to entrance Castle Garden,.....	1 13		
Premiums and engravings,...	43 35		
Cleaning Castle Garden,.....	40 00		
Injury with the fireworks on the Battery, (donation,)...	40 00		
		282 43	

Salaries.

Agent,.....	\$1,100 00		
Recording Secretary,.....	350 00		
Clerk,.....	800 00		
Librarian,	500 00		
Messenger,.....	203 00		
		2,953 00	
			8,338 04
Carried forward,.....			\$16,429 40

Brought forward,	\$16,429 40
Special deposit in Mechanic's Banking Association, on interest,	15,000 00
	<hr/>
Balance in the treasury Feb'y 1, 1853,	\$1,429 40
	<hr/> <hr/>

Bond and Mortgage.

Loaned on bond and mortgage, due May 1, 1854, ..	\$5,000 00
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REPORT OF THE BOARD OF MANAGERS
OF THE
THE TWENTY-FIFTH ANNUAL FAIR, 1852.

The Board of Managers of the twenty-fifth annual Fair of the American Institute, respectfully

REPORT:

That the Fair was opened at Castle Garden on the 6th day of October, and closed the 29th. The total number of exhibitors who presented themselves, exclusive of those at the cattle show, amounted to 2,292. The numerous applications to exhibit machinery in motion, induced the managers to enlarge the machine room by adding sixty feet to its length, at a cost of \$400. The room is furnished with an ample steam boiler, an engine of 25 horse power, a line of shafting 180 feet, with counter shafting, pulleys, &c. Notwithstanding these arrangements, they were found insufficient to accommodate all who desired it. The other departments of the Fair were full, and the entire exhibition manifested improvements beyond former Fairs.

The attendance of visitors was unusually large. The total net receipts at Castle Garden, show that near 100,000 persons paid for admission. Taking into consideration the number of members who are furnished with free family tickets, the number of delegates from various kindred associations in the United States, the extreme liberality of the managers in granting free admissions to distinguished individuals from abroad, with the free access of exhibitors, it may be fairly estimated that not less than 500,000 persons entered Castle Garden during the exhibition.

The total net receipts, including the cattle show, as will appear by the following statements, was \$25,429.49, the largest amount ever received during any former exhibition. The expenditures are necessarily larger, and will continue to be until the Institute possesses a permanent location, as a large proportion of them arise from the necessity of creating temporary fixtures, which have to be repeated annually.

The premiums awarded this year exceed in cost those of any former year \$1,000, together with \$400 additional expense by enlarging the machine room, make \$1,400 extra expenses. Deducting this sum from the total amount of expenses incurred, as now ascertained, they will fall some \$600 below the expenses of the last year.

The following is a summary of the awards :

- 90 gold medals,
- 320 silver medals,
- 121 silver cups,
- 335 diplomas,
- 174 volumes of books,
- \$48 cash premiums,
- \$20 and 3 bronze medals, Van Schaick premium,
- \$175 premiums on fire works.

The premium committee estimate the premiums to cost five thousand dollars.

The following is a condensed statement of the receipts and expenditures of the 25th annual Fair. For details you are referred to the report of the finance committee, which accompanies and makes a part of this report :

RECEIPTS.

To cash received from sale of tickets at Castle Garden,			
	Wednesday, Oct. 6,	\$456	00
"	Thursday, " 7,	726	50
"	Friday, " 8,	769	00
"	Saturday, " 9,	623	00
		<hr/>	
Carried forward,		\$2,574	50

Brought forward,	\$2,574 50	
To cash rec'd Monday, Oct. 11,.....	1,291 00	
" Tuesday, " 12,.....	1,319 50	
" Wednesday, " 13,.....	1,699 00	
" Thursday, " 14,.....	855 50	
" Friday, " 15,.....	1,324 01	
" Saturday, " 16,.....	1,318 00	
" Monday, " 18,.....	1,675 50	
" Tuesday, " 19,.....	1,341 00	
" Wednesday, " 20,.....	1,723 61	
" Thursday, " 21,.....	1,556 50	
" Friday, " 22,.....	1,460 00	
" Saturday, " 23,.....	1,102 00	
" Monday, " 25,.....	985 50	
" Tuesday, " 26,.....	862 00	
" Wednesday, " 27,.....	809 50	
" Thursday, " 28,.....	992 51	
" Friday, " 29,.....	720 87	
	<hr/>	\$23,610 50
To cash received at cattle show,		
Wednesday, Oct. 20,.....	\$341 00	
" Thursday, " 21,.....	698 00	
" Friday, " 22,.....	527 87	
" Catalogues at do.	13 25	
	<hr/>	\$1,580 12
To cash premium on specie,	\$373	
" rent of stands,	250 00	
" for oil used for Bull's stand,....	15 06	
" tickets for Mr. Walker's w'kmen,	12 50	
	<hr/>	281 29
		<hr/>
		\$25,471 91
Less discount on uncurrent money,		42 42
		<hr/>
		\$25,429 49
		<hr/>

Brought forward,

\$25,429 49

EXPENDITURES.

By printing and publication committee.

Printing circulars, blanks, invitations, tickets, handbills, &c.,	\$363 41	
Advertising,	216 43	
Bill posting, stamps, &c.,	28 63	
	<hr/>	\$608 47

By committee on light.

Gas light,	\$144 34	
Oil, use of lamps, and candles,	316 48	
Gas fixtures, bridge, and machine room,	63 27	
Lighting lamps,	130 40	
	<hr/>	954 49

By committee on police and labor.

Superintendent,	\$200 00	
Clerks at desk, and managers room,	240 50	
Clerk's cloth and hardware, ..	94 50	
Police and night watch,	972 50	
Labor,	255 37	
	<hr/>	1,762 87

By committee on fireworks.

Fireworks, five exhibitions, ..	125 00	
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By committee on music.

Dodsworth's band,	\$554 00	
Bloomfield's band,	280 00	
	<hr/>	804 00

By finance committee.

Ticket sellers,	126 00	
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By ticket committee.

Ticket receivers,	80 00	
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Carried forward,	\$4,460 83	\$25,429 49
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Brought forward, \$4,460 83 \$25,429 49

By agricultural committee.

Erecting sheds, pens, &c., ...	\$310 00
Printing catalogue of cattle, .	25 00
Advertising, (extra,)	165 50
Clerks and laborers,	59 00
Ticket sellers and receivers,..	12 00
Police,	18 00
Expenses of committee, .	20 75
Rosettes for cattle, and ribbon,	24 30
Tubs, &c.,	5 00
Bands of music, cattle show, and plowing match,	84 00
Refreshments, judges and com- mittees,	97 62

821 17

By horticultural committee.

Clerk,	\$58 50
Laborers,	455 81
Box for decorating room,	22 50
Papering room,	14 00
Cartage, freight, and sundries,	18 68
Use of crockery,	20 00

589 49

By committee on machinery.

Use of engine,	\$100 00
Repairs of boiler, &c.,	53 25
Superintendent,	95 25
Engineer,	77 00
Labor, &c.,	76 81
Coal,	100 88
Croton water,	10 00
Erecting additions to machine room,	390 00

903 19

Carried forward, \$6,774 68 \$25,429 49

Brought forward, \$6,774 68 \$25,429 49

By refreshment committee.

Dinners for managers while
detailed on duty, and guests
from a distance, 783 44

Miscellaneous bills.

Rent of Castle Garden, for 21 days,	\$2,100 00
Carpenter's work, covering bridge and fitting up interior, lumber and hardware,	719 42
Painting roof of machine room,	55 92
Muslin for covering tables, and flags,	85 84
Flag poles and mounting,	40 05
Bleaching muslin used on tables,	9 60
Rent of Metropolitan hall for anniversary address,	100 00
Expenses of orator,	84 00
Badges for managers and trus- tees,	10 70
New ticket boxes,	7 38
Cartage and freight,	7 81
Experiment with sub-marine boat,	30 00
Postage of circulars, post of- fice stamps, cleaning, twine, locks, &c.,	89 79
Blank books, stationery, en- velopes,	38 89
Hanging pictures in gallery, .	10 00
Glazing cases and windows, ..	37 77
	<hr/> 3,427 17

Carried forward,	\$10,985 29	\$25,429 49
------------------------	-------------	-------------

Brought forward,..... \$10,985 29 \$25,429 49

By premium committee.

Gold and silver for medals

and striking,..... \$2,030 07

Silver cups in part,..... 518 00

Medal cases,..... 128 00

Diplomas, paper and printing, 136 52

Filling up diplomas,..... 80 00

Books,..... 249 59

Cash premiums in
place of cups and

medals,..... \$659 25

Van Schaick premi'm 20 00

Fireworks, 175 00

854 26

\$3,996 43

Making a total expenditure of, 14,981 72

Which being deducted from the receipts, leaves, .. \$10,447 77

Of which amount there has been paid into the treasury of the American Institute, 9, 000 00

Leaving a balance in bank this day, \$1,447 77

JOHN A. BUNTING, *Chairman.*

JOSEPH TORREY,

GEORGE S. RIGGS,

JAMES R. SMITH,

PATRICK HENRY,

ISAAC V. BROWER,

WM. C. ARTHUR,

WILLIAM EBBITT,

SHEPHERD KNAPP,

F. W. GEISSENHAINER, Jr.,

JOSEPH COWDIN,

PETER B. MEAD,

THOMAS W. HARVEY,

BENEDICT LEWIS, Jr.,

JOSEPH R. TAYLOR,

WILLIAM HALL,

JARED L. MOORE,

EDWIN SMITH,

JOHN GREY,

BENJAMIN AYCRIGG,

GEO. C. MANN,

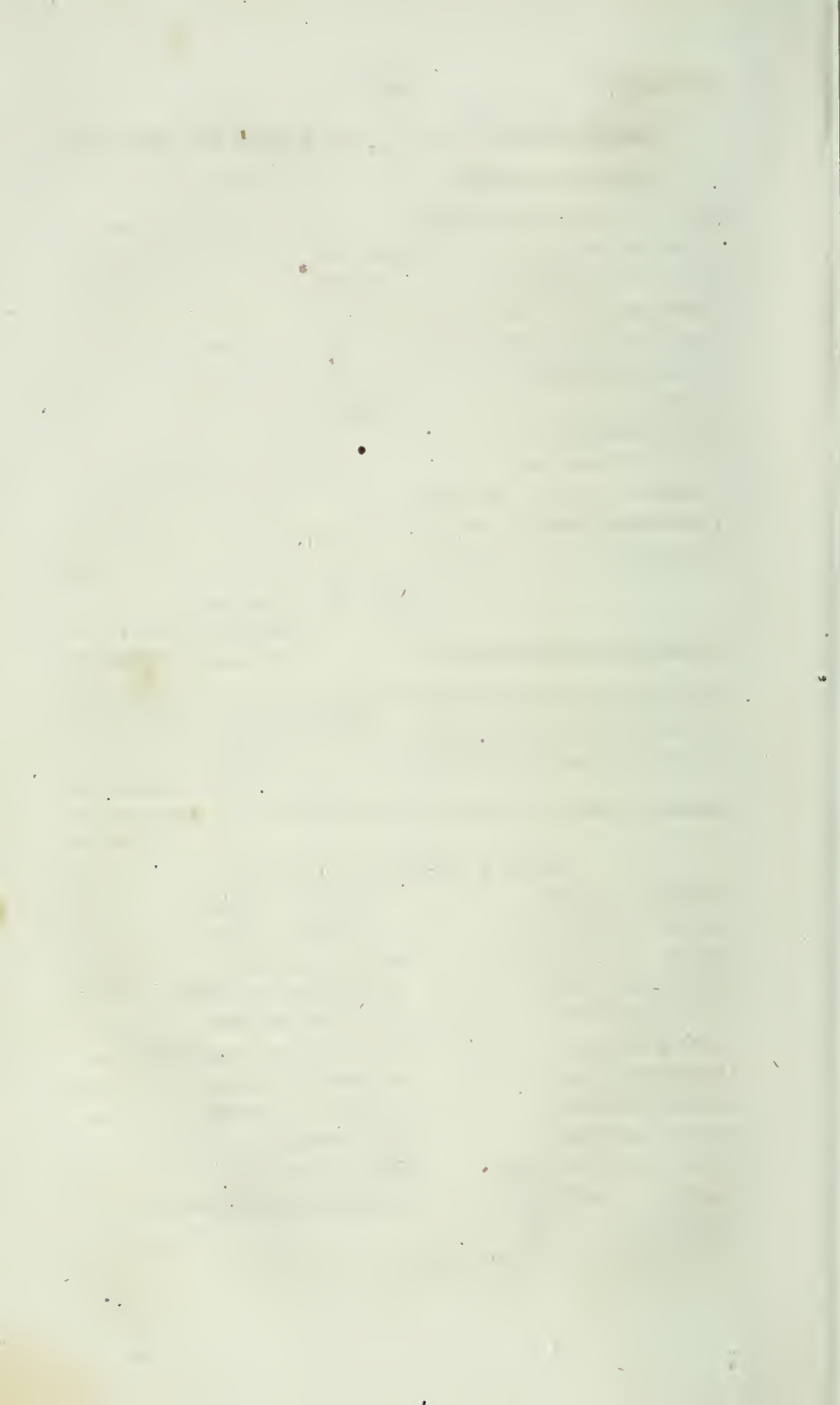
LEWIS G. MORRIS,

ADONIRAM CHANDLER,

RICHARD M. HOE,

Ex-officio

JOHN W. CHAMBERS, *Secretary.*



REPORT OF THE COMMITTEE ON AGRICULTURE.

The committee on agriculture, under whose care and direction the exhibition of the annual cattle show was placed, report :

That the exhibition was held at Madison cottage, corner of the 5th avenue and 23d and 24th streets New-York, on the 20th, 21st and 22d days of October, 1852, with a greater area of ground compared to former ones.

The weather was fine and the visitors (unusually numerous) who had come with the expectation of seeing a superior class of blood horses, horned cattle of all kinds, native, mixed and imported bloods, sheep of every species, swine and poultry of every nation, confessed that their hopes were fully realized.

It was remarked by several gentlemen who had visited the State Fair at Utica, that although the number of cattle was far greater at Utica than here, yet for quality, blood and appearance our exhibition was far superior to that or any other they had ever witnessed.

The programme adopted by the Board of Agriculture, published and circulated by the American Institute, was strictly adhered to by your committee in every particular.

The number of entries of horses was 59, one jack, one donkey, a shetland stud and mare—horned cattle 182, sheep 145, swine 82, dogs 17 and a large quantity of superior poultry both of the rarest and largest kinds, and of all varieties.

The sheep and swine were never equalled here at any former exhibition. The total number of animals was 486.

The competitors were numerous, and many of them came from distant States ; all seemed to take a deep interest in the exhibition, and much good humour prevailed throughout the three days

of the Fair. The judges were patient in their examinations, and having performed their duty, reported to your committee the several awards of premiums, with the names of the successful candidates to which all parties cheerfully submitted.

Your committee would suggest to the Agricultural Board (and they hope it will not be considered amiss or out of order, or in any way dictatorial to so respectable a body of men,) that in future when they appoint judges for our cattle shows, they will select men not only capable and judicious but also working men; those that will devote their time and attention to so important an object; for we find from experience that many are appointed to fill these stations, more on account of their standing and situation in society, than for their working qualities. This remark does not apply exclusively to the appointment of judges on cattle, but more to the men who are selected for the standing committees of the Institute, and elected by its members only because they are gentlemen of high standing and character; many of them never attend any meetings of the committee, so that the very object intended, to wit, their counsel and labor is lost, and it frequently happens that for want of their attendance, a quorum can not be had, and no business is or can be transacted, why then put such men on any committee.

Your committee will in anticipation of our future cattle exhibition, suggest the propriety, if not the necessity of taking immediate steps to procure a large and suitable plot of ground for that purpose—our old place of exhibition, Madison cottage, has been disposed of, and cannot be obtained. It has been proposed by some of our friends that Hamilton square, long belonging to the common council, about $3\frac{1}{2}$ miles from the city hall, would be an excellent place for us, a move to gain that object has been made, but unless persevered in will be of no avail, and will totally fail. It is the duty of every member of our Institute to exert himself to attain so desirable an object. The benefit of having a permanent and fixed locality would be incalculable, for when we once erect our necessary fences, stalls, pens, coops and other appendages, they will remain fixed and not be moved off the day after the exhibition is over, and be rebuilt annually as has been the custom heretofore, in fact this expenditure alone has been the largest portion of our expense in preparing the cattle show.

Your committee cannot express in words their indebtedness to Mr. Thomas Bell, Mr. Ralph Hall, and Capt. John M. Ferrier, for their generous aid and assistance during the three days of the cattle show, without which we should have been greatly embarrassed. Mr. Bell volunteered and took upon himself the most arduous duty of receiving, regulating and posting in the horned cattle department; his order and arrangement met the entire approbation of the many exhibitors of the bull family.

Mr. Hall managed, in his efficient way, the horse department, the duties of which he carried out to the utmost, and in a masterly manner, highly gratifying to the exhibitors of the stud family.

Capt. Ferrier volunteered and took charge of the swine and sheep department, and the number of hogs was so great (nearly double that of any former exhibition) that additional pens were required, and which were procured with that promptness and facility so characteristic of the man.

Your committee are of opinion, and they suggest to the board, that early notice should be given in the newspapers and circulars, of the time and place of holding our cattle show, that farmers, breeders of cattle, and all others taking an interest in it, may be apprised in due season, affording them an opportunity of preparing for the same; by doing so, the number of animals and visitors will be doubled, and our receipts increased in proportion.

The Board of Agriculture last year increased the price of admission from one to two shillings a visiter; this worked well, as the result fully shows, and greatly to the benefit of the Institute in a pecuniary point of view.

The receipts of the cattle show for 1851 were,.....	\$721 00
While the receipts of the cattle show for 1852 were...	1,580 12
Difference in favor of 1852,.....	<u>\$859 12</u>
Being \$148 over and above the whole amount of receipts of 1851.	

The expenditures for 1852 were,.....	\$772 62
“ 1851 were,.....	719 49
Difference,	<u>\$52 13</u>

Many of the exhibitors and owners of cattle were anxious to sell their cattle at auction, and we promised to take the subject into consideration. Your committee suggest that, in pursuance of such request, permission be given, and we recommend that the day set apart for that purpose should be after the expiration of the three days announced by the board for the exhibition of cattle, and not on the last day of the fair.

All which is respectfully submitted.

DAVID BANKS,
JAMES DE PEYSTER,
R. S. LIVINGSTON,
Committee.

[For list of awards and names of judges, see end of volume.]

HORTICULTURAL REPORT

OF THE

25th ANNUAL FAIR OF THE AMERICAN INSTITUTE,

OCTOBER, 1852.

In presenting another horticultural report, there is renewed cause for congratulation. The Fair which has just closed, has been by far the most successful ever held by the American Institute. This is true, whether we regard the number of people who visited it, or the intrinsic excellence of the articles presented to their inspection. The same remark may have been made of preceding Fairs, and with equal truth; and I hope as much may be said of those that are to follow. The world is progressive in all that concerns the human race; and at the great Fairs of the Institute ought to be brought together the evidence of the progress that has been made in all matters pertaining to science, art, and the various departments of productive industry. This has been the case heretofore to a considerable extent, it will be so hereafter to a still greater extent. Without boasting of what the Institute has done for the protection and promotion of American industry, I may be permitted to say that it has labored to deserve well of its patrons and the public at large, and it is believed that it now occupies a place in the public regard which will not easily be taken by another.

Having thus briefly alluded to the general character of the Fair, I will now submit a few remarks on the horticultural department. The change of this department, from the gallery to the saloon, was a good one, and gave general satisfaction. A room or saloon is better adapted for a horticultural exhibition, than a gallery can be under any circumstances. While it affords greater advantages for an effective display of horticultural pro-

ductions, it enables the public to inspect them more closely with less labor and time, matters of no small moment to those who come to seek knowledge. While some visit our Fairs from motives of idle curiosity, or merely to gratify the sight, there are others who come from objects of a much higher order; and it becomes our duty to extend to these latter every facility in our power. Each Fair constitutes a school, in which much may be learned.

The Horticultural show was in a high degree satisfactory. The remark was frequently heard, that it was the most beautiful part of the Fair; quite a matter-of-fact statement, to be sure, in itself considered, but of peculiar significance when we take into consideration the standard of taste that prevails. I hail it as a harbinger of a better time coming.

A large show like this, embracing productions from such various localities, affords peculiar facilities for collecting interesting and useful information; and the opportunity was not allowed to pass unimproved. On many subjects I collected much that was useful, which, if incorporated in this report, would doubtless give it some degree of interest, though it would make it one of great length; but I am convinced that this information will prove much more useful to those for whom it is intended, if put in the form of monographs, and for that purpose it is kept. It will therefore only be necessary for me here to give some general idea of the character and extent of the Horticultural exhibition.

The show of flowers, though very fine, was not quite equal to some former exhibitions, at least after the second week. An early frost cut off the supply in some considerable measure, and thus robbed the Horticultural room of some of its greatest charms. Our Fairs are held so late in the season, that an occurrence like this must be looked for as a matter of course, and we must consider ourselves fortunate when we escape. There is another serious drawback connected with our Fairs, at least so far as concerns this department: the great length of time during which they are kept open. No person unacquainted with the nature

and culture of flowers, can form any proper conception of the immense labor and trouble of keeping up a show during four mortal weeks in a hot room, filled with dust and noxious gases; and the wonder is, that our florists can be prevailed upon to exhibit at all under such circumstances. They deserve more credit, and a higher reward than they have yet received. My thanks and good will they have in abundant measure; and I cannot help adding again the hope, that the Institute will feel it to be its duty to extend to the florist and amateur, a higher degree of encouragement than has yet been afforded them. In addition to the usual attractions, there were several specimens of that rare and singular flower, the *Aristolochia Braziliensis*, from the Messrs. Hogg, of Yorkville; and also a number of blooms of the *Cereus triangularis*, from A. P. Cummings, Esq., of Williamsburgh. The display of bouquets and baskets was uncommonly fine.

Vegetables were shown in great abundance, and very superior of their kind. I think we have never had so large a show of fine vegetables, and never such spirited competition for the general display. The collection of vegetables embraced several novelties; among other things, a new winter radish of great excellence, Spanish garbanzos, (a substitute for peas,) and Japan beans. These latter have since been distributed at the Farmer's Club, and elsewhere, as Japan peas; I think incorrectly. They were grown by Mr. Jones, of Cold Spring, L. I., who states that the seed were taken from a Japanese junk, found abandoned in the North Pacific Ocean, in August, 1850, by the whaling ship *Splendid*. About one quart of seed were planted, only two of which came up, and these two produced about 750 beans. They are, as I learn, very prolific, quite early, and promise to be a decided acquisition. The Garbanzos are very large, taste like peas, are said to be early, and yield abundantly, (more so than peas,) and may prove to be another acquisition. We shall know more about these things in the course of another year. It may not be amiss to state that turnips were exhibited weighing ten and twelve pounds each. The potatoes were remarkably fine, and of larger average size than I remember to have seen them before. Mr. C. W. Forbush, of Grafton, Mass., exhibited the peach blow potato, weighing $17\frac{1}{2}$ ounces, grown from sprouts, the potato

itself not being planted. It has long been known that potatoes would grow from sprouts, and cuttings, but it remains to be seen, whether it can be done profitably on a large scale. Mr. Forbush, I understand, planted about an acre in this way on a reclaimed meadow, and estimated the crop at from 250 to 300 bushels the acre. It is to be hoped that he will publish the results of this interesting experiment.

The fruit exhibited was abundant, and generally of fine quality. The display of apples embraced many superior specimens of choice varieties, first among which were the Vandever and Newtown pippin, finer samples of which it would be difficult indeed to procure. A catalogue cannot be attempted here; suffice it to say, that the display embraced almost every thing in season, from a mammoth pippin, down to the Siberian crab. The display of pears was also very fine. Duchesse d'Angouleme, White Doyenne, Louise Bonne de Jersey, Seckel, Beurre Diel, &c., were shown in great perfection. The number of persons who came in to make catalogues of pears, was a pleasing evidence that this luscious fruit is getting to be more generally known and esteemed. Of other fruits, there were samples of remarkably fine quinces, plums, cranberries, &c. A sample of tomato figs may be mentioned here, as they were deemed by the judges worthy of special notice. They were exhibited by Mr. Porter, of Middletown Point, who intends, I learn, to make a large quantity for market. They have a pleasant, agreeable taste, and will probably meet with a ready sale.

Foreign grapes fell off to a single entry; but this was made up in some measure by a remarkably large and fine show of natives, embracing a greater number of superior samples than I have ever seen together before. The season had been unusually favorable in most localities, and the grapes were admirably matured. Among other natives was the Charter Oak, in regard to which I will add a few words. My opinion of this grape has been frequently asked, and I will now put it upon record. This I do for several reasons, foremost among which is this, that my position imposes it upon me as a duty to the horticultural community. I have seen this grape exhibited several times under different names, and in its wild state, (*Vitis labrusca*), it is associated with

my earliest boyhood rambles through the woods. It was exhibited at the late show of the New-York Horticultural society, and Metropolitan hall was redolent of its peculiar odor. On the second day of the exhibition, the same grape was sent in by the Shakers of Lebanon under the name of "seedling muscadine;" but they were not allowed to be entered on account of their offensive smell. I have seen the same grape elsewhere under other names; indeed, one might almost say that it may be found growing wild from Maine to Florida. My own opinion is, that, compared with the Isabella, Catawba, Brown's Seedling, Early York, Diana and some others, it is a worthless grape: among the poorest of all our natives. This is not my opinion alone; it is also that of the judges at Castle garden and the New-York Horticultural society; indeed I have heard but one opinion from persons who know what the first requisite of a good grape is. It is large, and that is the best that can be said of it; it is wanting in all other good points. No degree of culture can ever make it a first-rate grape, though it may possibly improve it. I state my opinion the more freely because of the fictitious character under which it has been placed before the community. The stories that are told of its "growing in large clusters like other grapes;" of its "being juicy and very sweet flavored," and "commanding an advanced price over any other ever grown," &c., are purely fabulous. I have now done what I would do in regard to any inferior article exhibited in the department under my charge, if brought before the public under similar circumstances; nay it is only what I have done before, and will do again in the way of duty.

Townend Glover, Esq., of Fishkill Landing, exhibited a part of his composition model fruit, which, as usual, were examined with a high degree of interest, which they have never failed to excite wherever they have been seen. Much has been said of the surprising truthfulness of these models, to which I again bear a willing testimony. It is a remarkable fact, that a great majority of visitors went away under the impression that they had been looking at very choice specimens of real fruit; and one person seemed quite annoyed when an attempt was made to undeceive him, not liking to acknowledge that his eyes had misled him. On the contrary, another person, after having discovered his mistake,

thought it a good joke ; and under the impression that they were wax, thought to make himself merry at the expense of some ladies ; but he got caught in his own trap. There happened to be in the case at the time some veritable pears a little decayed. In the midst of the joke, and just at the moment he was turning the laugh upon the ladies by exclaiming, "Ha ! ha ! they are only wax !" I went up to him with assumed seriousness, and begged the privilege of assuring him that they were *not* wax. He was taken aback, but presently said they *were* wax, for he had been told so. I replied that I could not help what he had been told ; but, to convince him, I would show him one. Taking one of the pears out of the case, I plunged my finger in a decayed spot, and remarked, in a quiet way, "there sir, do you call that wax ?" The laugh was turned against him, and he walked off with a look which can be better imagined than described. Similar cases were constantly occurring, and they speak volumes in favor of these beautiful models. It is only those, however, who have seen Mr. Glover's entire collection, who can form any just idea of its vast importance for pomological purposes. In my humble opinion, Mr. Glover has done more for pomological science than any other man of the day ; and it reflects great credit on the good sense of the American Institute that it has availed itself of the opportunity of securing a collection of these invaluable models by appropriating a sufficient sum for that purpose. But Mr. Glover is a true artist, and does not confine himself to fruit alone. He is now engaged in the interesting subject of Entomology, and in connection with Professor Harris, will probably bring out by far the best work on that subject that has yet been published. He is very industrious in collecting, engraving, and modeling entomological subjects ; and we had a very remarkable specimen of his modeling in this way at the Fair : a monstrous, uncouth *Aptera*, like one of those, I should suppose, which are said in California to devour a cabbage a day. One gentleman said he had seen it in South America ; but as nobody knew its name, it was proposed to call it, for special reasons, *Martynia Gloveriana*, in honor of Mr. Glover himself.

The display of agricultural products was large, and many of the samples of superior quality. The Mediterranean wheat was

considered best by the judges, and the Bergen very little behind it. Much has been said of the Australian wheat, but no large sample has yet been exhibited at the Institute. We had a small bottle of it; the grains were large and heavy, but they seemed to have been picked out for show. The judges, two of whom had grown it, stated that it would not yield as much per acre as either the Mediterranean or the Bergen. There were several fine samples of rye and oats; but, on the whole, they were much the same as at former fairs.

Mr. Giraud, as usual, was on hand with a magnificent display of corn, and finer could not well be imagined. While my opinion remains unchanged, that a few choice kinds are sufficient for any one locality, I think, notwithstanding, that Mr. Giraud deserves great credit for his enterprise in growing such a great number of varieties. He has not only proved the capabilities of this locality for growing all the known varieties of corn in the greatest state of perfection, but he has made our Fair a kind of House of Representatives for the whole Union. Under no other circumstances, perhaps, should we have the opportunity of comparing so many varieties. Mr. Williamson exhibited a sample of corn of extraordinary growth; but it came in too late for competition. There was also a remarkably fine sample of sugar corn of unusual size. Altogether the display of corn was in the highest degree satisfactory.

The display of butter and cheese was much the same as at former fairs, and needs no particular comment. Some samples of imitation Swiss and Sapsago cheese, of domestic manufacture were exhibited, which the maker thought might supercede the imported article, and become an important branch of domestic manufacture. The judges thought the Sapsago cheese to be a very fair article of its kind. The entries of butter were numerous, but, as sometimes happens, the best sample came in too late for competition. This arose, in some measure, from the fact, that the day on which butter should have been entered was not announced in our circular.

Of flour and meal the falling off was remarkable, the effect of the stringent rule adopted by the Board of Agriculture. Here-

tofore we have had from 25 to 30 entries; this year there were only three, and in no case was the rule complied with. We have taken altogether too long a stride. I have since made inquiries in various quarters, which have led me to the conclusion, that we must either abandon the rule, or give up this important part of our exhibition. The following are some of the reasons why it cannot be complied with: It would be necessary to stop the mill and clean out the elevators, conveyors, coolers, bolts, &c., preparatory to the manufacture of the 100 barrels, from which the one was to be taken, and after this another stoppage and cleaning out to ascertain the yield, a degree of trouble and expense which cannot reasonably be asked of any miller. Another reason is, that no such uniformity as would render the competition just or judicious, exists in the manufacture of flour, each mill having its peculiar system based on the demand it has to supply. Country millers grind all they can into flour, the offal being of little value to them, while city millers, whose offal is in constant demand at a high price, have not the same motive to make poor flour, and can therefore give it a due proportion of wheat. Another reason is, that the quantity of grain used in the manufacture of a barrel of flour is of little or no importance to the public, whose opinion will always be governed by its quality and price. In addition to this, the details of the quantity of raw material used in a mill, long and successfully established, with the yields, &c., the result of great labor, experience and cost, are precisely those things which prudent men would withhold from others in the same business. Another reason is, that the rule can only be fairly carried out, by requiring the competitors to use one kind of wheat grown on the same soil, and ground and bolted in a specified temperature, different wheats yielding different results, according to the soil on which they are grown, and the condition of the atmosphere in which the flour is manufactured. In short, I am convinced that the rule is injudicious, if not impracticable, and it should be abolished at once; at all events, it operates exclusively, and for that reason, if no other, it should be abandoned.

The few samples of flour exhibited were of very superior quality, and a sample of Fowler's "Patent Self-raising Flour" excited

no small degree of interest. This is a most valuable invention, and will work an important reform in domestic economy. Bread made from this patent flour was exhibited at the Fair, and found to be a very excellent article. Samples of the flour were handed to old and experienced housewives, who all bore testimony to its excellence. The most distinguished chemists and physicians in this country and in England, have analysed it and tested its qualities, and not only stated that it makes a light, sweet, and easily digested bread, but have also pronounced it free from any deleterious substance. The common method of fermenting bread by the use of yeast is open to many objections, and something has long been sought for that would supercede it. This something, it is believed, has at length been found in the "Patent Bread-raising Compound." The Messrs. Hecker have put up an apparatus, in connection with the patentee, by which this compound is thoroughly and perfectly mixed with flour in an incredibly short time.

In this age of steam, these gentlemen may certainly be put down as fast men. When the compound is thus mixed with the flour, we have the "Patent Self-raising Flour," which, with the addition of cold water, enables us to have a light, sweet and wholesome article of bread within an hour from the time it was mixed. Some ten or twelve hours are required with the use of yeast, to make bread, which frequently proves heavy and sour; and in addition to this, there is the loss by fermentation of nearly all the saccharine qualities of the wheat. Some experiments have been made on this subject, and it is found that by the fermentative or old process, a barrel of flour yields, on an average, about $268\frac{1}{2}$ pounds of bread; while the new process yields about 300 pounds.

Taking the population of the United States at 25,000,000, and allowing three quarters of a pound of flour per head, as the daily average consumption, (equal to 31,948,980 barrels per annum,) we have, by the patent process, a saving of 3,669,642 $\frac{1}{10}$ barrels annually in the consumption of breadstuffs in the United States alone, or a little over $10\frac{1}{2}$ per cent. in favor of the Patent Self-raising Flour. Here is an immense saving; and he must be regarded as a benefactor of mankind who enables us to get such an

increased quantity of bread from a given quantity of flour; bread, too, of a more wholesome and nutritious quality than can be made by the fermentative process. This is "making two blades of grass grow where only one grew before," in an important sense. And what labor, drudgery and vexation are spared to the housewife. And how much more tolerable and cheerful will the sailor's life at sea be, when he can have at almost any moment a good and wholesome article of fresh bread. With the patent flour and Gail Borden's Meat Biscuit, (perhaps the greatest invention of the age) the sailor's life in a long voyage will be shorn of many of its hardships. I repeat, that the general introduction of the patent flour must work an important revolution in domestic economy, and add much to the health and comfort of all who use it.

Of miscellaneous articles we always have an abundance. A number of hams, put up for long voyages by a patent process, would seem to deserve more than a passing notice. The hams themselves were of fine quality, but their chief value for long voyages must depend, of course, upon the covering in which they are incased. As the capability and durability of these patent coverings could only be, certainly proved by an ocean voyage, the judges could not safely do more than state, after a careful examination, that they seemed well adapted to fulfill the purpose for which they were designed. Anything which has for its object the lessening of the hardships and privations of ocean life, should be duly encouraged.

I take pleasure in alluding to a remarkable fine show of wire-work, for gardens, containing almost the only really useful articles of the kind I have ever seen. What generally goes under the name of wire-work, is of little practical use, being mostly made for show, and not often in good taste. Mr. Burnett, however, had some things that were new, as well as useful, tasteful, and ornamental. The pointed archway combined beauty and utility, and was a superior piece of work. In this connection I will mention an improved watering pot, made by Mr. Poole. This is a most useful article, and needs only a few other improvements to make it perfect of its kind. It is so superior, however, to any other now in use, that it is deserving of special notice. It has two

movable roses, only one of which is pierced. One rose is placed at the extreme end of the spout, and the other on the under side near the end, and they can be interchanged at pleasure; but the pierced rose should be placed on the under side for general purposes. By this arrangement the water can be delivered just where it is wanted in a cleanly manner, thus rendering it a very neat article, especially for watering plants in rooms.

I will here notice some metallic castings, entered by Mr. Gilbert, as agent for the inventor. The process by which these castings are made, is a novelty, and promises to be of great utility. An exact copy of almost any object, no matter how delicate its texture, can be reproduced, and this, too, without injury to the object itself, with a few rare exceptions. I have seen a cast taken from a bouquet, without injury to the flowers; and the cast of the lizard, exhibited in the horticultural department, was taken without killing the animal. The organic parts of flowers, the veins of leaves, the antennæ of insects, &c., are all reproduced in remarkable perfection. In architecture and kindred arts, this process will prove to be of great value. A fuller description will be found in another place.

Last of all, comes a long list of miscellaneous articles, such as artificial flowers, rustic work, hermetically-sealed fruit, wine, honey, pickles, preserves, spices, mustard, &c., &c., which I am compelled to dismiss with a passing notice, with the exception of several botanical maps, very handsomely executed by a young lady, of which I must speak in terms of high praise. I must also state, in justice to the parties concerned, that, owing to the great heat of the room, every sample of wine underwent the process of acetous fermentation; thus rendering it unfit for the examination of the judges. This statement is made, in order that it may be known why no report was made on the article of wine.

Before concluding, I would recommend, that, hereafter, an amateur's list be made for the horticultural department. I think, that in this way, we can add considerably to the attractiveness of our fairs, and, at the same time, increase the domain of horticultural taste. Amateurs, as a class, have heretofore been overlooked. There are some, who indulge a taste for fruits and flowers, neces-

sarily in a small way, who, since they cannot compete with the professional grower, would be glad of an opportunity of competing among themselves. A premium list, prepared for amateurs, would act as a stimulus in increasing their number.

I have now done. It has been a matter of congratulation with me, that there was no falling off of interest at our last fair, either on the part of exhibitors or the public at large. I sincerely hope, that this good feeling will continue to attend the labors of the Institute, in time to come. The field of improvement and discovery is constantly enlarging. Active and inquiring minds are exploring it, in all its parts, in search of hidden treasure, and almost every day, some addition is made to our knowledge of the laws which govern the physical world. While the American Institute continues to stimulate and encourage this condition of things, it will never cease to be regarded with interest by the public mind.

All of which is respectfully submitted.

PETER B. MEAD,
Chairman of Horticultural Committee.

REPORT OF THE COMMITTEE ON FARMS, MARKET GARDENS, AND FIELD CROPS.

FARM OF ELIJAH H. KIMBALL.

Your committee respectfully report, that on the 20th day of September last, they visited the farm of Elijah H. Kimball, Esq., at Flatlands, L. I.; for a full description of this farm, they refer to the Transactions of the American Institute for the year 1851, page 43, the description in regard to crops for 1852, will not vary so much this year as to require a distinct report.

Mr. Kimball's farm, undoubtedly, is in a more perfect state of cultivation than any other farm of 100 acres visited by your committee. They have awarded to him the first premium for a farm of 100 acres.

His method of cultivation is described in a communication to your committee, which they herewith append.

A. NASH,
DAVID BANKS,
NICHOLAS WYCKOFF,
THOMAS BELL,
HENRY MEIGS,
ADONIRAM CHANDLER,
Committee.

JOHN. W. CHAMBERS, *Secretary.*

GENTLEMEN :

Having been awarded the first premium by the American Institute, for the best cultivated farm of one hundred acres for the present year, in obedience to the rules of your institution, I send you the following statement of my mode of cultivation :

I observe in the first place, that as far as possible, I adopt the following rotation of crops : indian corn upon green sod ; potatoes after corn, with a second crop of turnips or cabbage the same year ; potatoes the following year, followed by wheat sown in the fall with timothy, and in the spring adding red clover seed. Thus stocked, the meadow is permitted to remain so long as it yields two tons of clean hay to the acre, which is usually five or six years, without top dressing. Each crop is thoroughly manured, except the turnips.

Manure.—The manure heap is made up from the barnyard, the horse stables and the hog pens, composted with muck or mud from the salt meadows, leached ashes, ground bone, charcoal dust and guano. I form the compost as follows : charcoal dust at the bottom, wet muck, then ashes, then barnyard, hog and stable manure, then bone dust, and so on in rotation, until the material is exhausted. Then cover the whole heap with charcoal dust, and cover the charcoal dust with a heavy coat of seaweed and drift, which is thrown up in great abundance from the bay on the farm. By means of such covering, the manure heap loses none of its ammonia, and other fertilizing qualities. Immediately previous to applying the manure to the crops, the heap is turned, and thoroughly mixed and made as fine as possible, then through each load as it is taken to the field, a small quantity of Peruvian guano is sprinkled, equal, say fifty pounds to the acre. I have never known a tree, vine, or vegetable, upon my farm, that did not thrive on manure composted according to the above receipt ; and any success which I have had in agriculture, I attribute mainly to the practice of giving every animal, and every tree, vine, and vegetable, plenty of food, and in such variety as to ensure good health and condition.

My agricultural year commences on the 1st of December. I then commence preparing my hot-beds, which consist now of

four hundred feet of glass; in these beds are placed at the bottom, leaves gathered from the woods, about six inches in depth; upon which fresh horse manure is laid about nine inches deep, with a layer above of fine rich loam. Three crops of lettuce are usually sold from these hot-beds, before the outdoor lettuce comes in competition with it. After the first crop of lettuce, cucumbers are planted, so as to be ready to occupy the hot-beds as soon as the last crop of lettuce is turned out. A large yield of early cucumbers then comes into market, by the time or before a cucumber seed would be planted in the open air. These hot-beds are very profitable, and enable the farmer near the city to keep his men employed during the winter, instead of discharging them to spend their summer earnings before the next spring. January and February are spent chiefly in marketing and collecting and forming the manure heaps. The 1st of March, or the earliest period that the frost leaves the ground potatoes are planted.

Preparation for planting potatoes.—I harrow the ground, then plow, then harrow again, then form drills in these open drills. I place the seed about 8 or 10 inches apart, cover the seed with manure from the compost heap, then cover the whole with the plow by a furrow thrown on each side. This covers the seed quite deep, so that it is uninjured by the spring frosts; when past danger from the frost, the drills are harrowed down. I plant Mercer potatoes principally; usually about 3 acres of white, called here the English white, or Aulgee potato; they are dug and carried to market before they are fully grown, and are sold at a very high price.

Corn —I cultivate five varieties of Indian corn, viz: the Long Island white flint, the Jersey white dent 12 rowed, the large eight rowed yellow, the evergreen sweet corn, the twelve rowed sweet corn. I plant the white flint corn from the 1st to the 15th May, sweet corn every two weeks until the 1st of July. I manure in the drill with the compost, adding a little extra guano. I sow all my root crops in drills after sub-soil plowing. I use the composted manure above referred to, well mixed with the soil in the drill before sowing.

Wheat.—Immediately after the potato crop is removed, the ground is cleared of every vine and weed; it is then harrowed and plowed repeatedly, until the soil is mellowed fine, and a thorough manuring from the compost heap follows. This is plowed and harrowed in. Timothy seed is also sown thick. In the spring, red clover is sown, followed by the roller, which completes the process. I usually sow the white Bergen wheat, which has so often taken the premiums at the Fairs of the American Institute, until it was supplanted by the Australian wheat, which in my judgment is not fit to be raised in this climate.

My corn during the last year has averaged about 60 bushels to the acre. Wheat do 28. Mercer potatoes do 150. Carrots do 325. Rutta бага 450. Red top turnips, (white,) 510. The hay crop is lighter than usual, the crop averaged full two tons to the acre. Rutta бага and red top turnips are raised as a second crop after potatoes, and without any additional manure.

The following is the product of three acres of land, from which I have this year raised two crops: 1st. The whole three acres were planted with early potatoes on the 1st of March, from the sale of this crop I received in the month of July, \$383.25. After the potatoes were removed, one acre was given to celery, one to spinach, and one to Ruta бага. My turnip crop is about five hundred bushels, estimated at least at \$100. My celery is not yet sold, but I have been offered \$350 for it, as it is now put up for the winter market, which was refused. The spinach is very large, and well covered, waiting for the spring market. At the usual price for that season, I cannot fail to get less than \$200 for the crop. Here is a product of over \$1,000 from three acres. The potato crop was thoroughly manured; the turnip and spinach crops were not manured. The celery was enriched with manure taken from the hot-beds, which had already produced 3 crops of lettuce, and one of cucumbers. It is unnecessary for me to describe my mode of raising and treating of fruits and fruit trees, as that is fully set forth in the report of your committee of last year, and to which I refer respectfully.

ELIJAH H. KIMBALL.

FARM OF ROBERT B. COLEMAN.

Your committee respectfully report, that on the 25th day of June last they visited the farm of Robert B. Coleman, Esq., of the Astor House, at Flatlands, L. I., situated about 8 miles from the city of New-York.

This farm contains about 51 acres, besides some 20 or 30 acres of salt marsh land, mostly lying under water, but producing a large growth of swail or coarse grass. It is bounded on the north and east by the farm of Elijah H. Kimball, Esq.; on the south-east side it fronts on salt water, forming a portion of Jamaica Bay. The soil of the farm is apparently of a late formation, composed of a rich sandy loam, and along the salt water shore a handsome breadth of black peat soil of an unknown depth presents itself. Mr. Coleman informed your committee that he purchased this farm in the fall of 1845; that he paid \$129 per acre; the salt grass land was thrown in the bargain; that the condition of the farm when he purchased it was deplorable indeed, without a fence to protect it, or a dwelling house which was habitable; the soil was full of hedges and noxious shrubs and weeds.

This farm, when subdued, is easy of cultivation, few, or no stones are found upon it.

Since the farm has come into his possession, he has erected 580 feet of iron wire fence, the cost of which was \$1.80 per rod; 7,000 feet of picket fence at the cost of \$1.25 per rod. He has put up 400 feet of glass frames for hot beds, in which are raised early lettuce, cucumbers, and other vegetables. He has also erected 300 feet of arbor for grapes, ten feet high, and eight feet wide, which is now covered mostly with young and thrifty vines of the Isabella and Catawba varieties; there are now growing 150 young vines and plants. The dwelling house has undergone many alterations and repairs. In front of his house is a young and elegant grove of shade trees, which not only afford a pleasant retreat for his family and guests in the summer, but is visited hourly by birds, which render it vocal by their songs. Your committee witnessed several flights of songsters into this

grove, which had become tame by feeding, and by social and kind treatment.

Mr. Coleman's farm is now filled with luxuriant crops, abundance of fruit, and a large number of young trees just coming into bearing.

The location of this farm is undoubtedly superior in many respects; it is adjacent to Jamaica Bay, and on the easterly side of Long Island, a short distance of two miles from the ocean. Sloops come to a dock erected on his farm.

Mr. Coleman raised this season past sixteen acres of potatoes; they were of the Mercer and Western red varieties, looked unusually well on the ground, the vines were free from disease, and filled abundantly with blossoms; the crop produced was from 150 to 200 bushels per acre; they were valued at $87\frac{1}{2}$ cents per bushel. He also raised five acres of turnips as a second crop on the ground when he dug his early potatoes; the turnips yielded 450 bushels per acre. He raised $2\frac{1}{2}$ acres of winter wheat, production 50 bushels per acre; four acres of Indian corn, production 150 bushels of ears per acre; one acre of sweet corn; half an acre of Lima beans; one acre of carrots; one-third of an acre of cabbages; two acres of spinach; fifteen thousand celery plants; one acre of strawberries; Hovey's seedling and Boston pine; they were in full bearing when your committee saw them; they produced very large fruit of a good flavor, and many of them approaching the size of Madeira nuts. Mr. Coleman plants his strawberries in hills about two feet apart, dressed in the fall season with barn-yard manure, and with a light covering with seaweed to protect the plants from frost and snow. In the spring it is raked off. Weeding and trimming are the only care required to produce a luxuriant crop. Your committee would recommend this method of cultivating the strawberry, as economical and practical. There were also in his garden a bed of four hundred plants of raspberries; these produce an abundance of fruit. He has set out in his orchard six hundred pear trees, grafted on the quince stock; these are of choice varieties, of which one hundred were in bearing; one hundred apple trees were bearing grafted fruit. Mr. Coleman adopts the plan of plowing among his apple

trees, and fertilises the ground with top dressing of compost and stable manure. Your committee would recommend this plan for the management of orchards.

A nursery of three thousand young pines, and two thousand young arbor vitæ trees, were growing vigorously; these trees were brought from the State of Maine, in crates; they cost four cents a tree, delivered at Flatbush; none were lost by transplanting.

There was four acres of timothy grass exhibited to your committee, in one field, which produced two tons per acre. In another field, was growing four and a half acres of timothy and clover, which yielded three tons per acre. In a third field, were nine acres of timothy, which produced two tons per acre.

Mr. Coleman informed your committee, that he sold, prior to the 25th of June, from his farm, garden vegetables, cucumbers and spinach, to the value of \$600. That his fall crop of spinach, beets, carrots, celery and cabbage, yielded him more than \$600 more, which were used by him to supply the Astor House.

He has cut from three to ten acres of salt coarse grass per year which are used for covering vegetables, feed for cattle, and the hogpen and barnyard. The stock kept by Mr. Coleman, this year, consists of four farm horses, one pair of mules, four milch cows, and twenty hogs; other horses are taken to stable, which consume the balance of the hay grown on his farm. At times, Mr. Coleman has kept one hundred and fifty hogs; he supplies them with food from the Astor House, which is sufficient to feed, this number of swine; the hogs are put into pens, with yards adjacent, into which is thrown sea weeds, salt water grass, and peat muck, which form a compost of excellent quality; the hogs are found to be active workers in muck and compost.

He has reclaimed four acres of peat land; this soil is of great depth, and is found to contain a large portion of clam shells; this is the only form in which lime has been used on this farm; the shells crumble, and when raked out, produce a good covering for garden walks, as well as a fertile ingredient in the compost or manure heap.

In the use of manure, Mr. Coleman mixes his stable manure with compost, to which is added a supply of leached ashes. He purchased three thousand bushels, the last season, at Waterford, N. Y.; the cost of which was $12\frac{1}{2}$ cents per bushel, delivered at his dock.

The effect of this kind of manuring, may be judged from the fact, that in the year 1851, he raised four acres of winter wheat, producing one hundred and forty bushels; the same field was sown with timothy grass, and yielded three tons per acre. Adjacent to his house and barnyard, Mr. Coleman has put down a receiving cistern, ten feet long, eight feet deep, and about the same width. The soap-suds and liquid from the kitchen, from the water-closets of the house, and from the stables, are conducted by pipes into this cistern, which is supplied with compost, which affords a powerful manure.

Adjacent to his garden, he has erected an ice-house, twelve feet high, sixteen feet in diameter, laid up in mason work; it holds forty tons of ice; the whole is covered with earth, and sodded, and raised into an elegant mound; the ice is covered with straw.

His method of feeding stock, is with hay and boiled vegetables; the hogs are fed with boiled potatoes, turnips, carrots, and stale sea bread, obtained from ships on their return voyages.

Mr. Coleman employs one head gardener, at \$25 per month, boarding himself, seven laborers at \$10 per month, and board, and one house servant. His cash expenses for labor, are \$1,284 per year. The cost of his manure is \$700.

Your committee found Mr. Coleman's farm thoroughly cultivated and manured; his buildings were good; his fences were permanent, inclosing clean fields and luxuriant crops. His fruit trees were thrifty, and well grafted; his grape vines healthy, and promising to yield large crops. The shrubbery was tastefully arranged. The avenues around his premises beautifully laid out, and everything indicated a practical and careful management.

The cultivation of his farm was in a high state, made so by judicious and scientific husbandry.

Your committee unanimously came to the conclusion, t
Coleman is entitled to the first premium, awarded by the American Institute, for the best cultivated farm of fifty acres.

New-York, Jan. 1, 1853.

ALANSON NASH,
DAVID BANKS,
NICHOLAS WYCKOFF,
JAMES DE PEYSTER,
THOMAS BELL,
ADONIRAM CHANDLER,

JOHN W. CHAMEERS, *Secretary.*

Committee.

FARM OF JAMES J. MAPES.

Your committee respectfully report that on the 17th day of July, 1852, they visited the farm of Prof. Jas. J. Mapes, near Newark, N. J.

This farm consists of about 60 acres of land, 35 of which is cultivated as a fruit orchard and market garden. It is situated on the old Elizabethtown road, two miles south of Newark, N. J. The farm originally had been more or less cultivated for a great number of years, and had become exhausted. The soil of this farm is a volcanic debris, not unlike that which appears on the eastern part of Rockland county, in the State of New-York. It is a hardpan soil, mixed with many stones broken from a volcanic green stone slate, and a red sandstone. The present occupant has made an analysis of the soil, and as he informed your committee, has gradually added the missing organic constituents with such amendments as renders it retentive of manure and capable of absorbing and retaining the fertilizing gases of the atmosphere. The general aspect of this farm where it has not been cultivated of late, is that of a barren region, and difficult to subdue and render productive. All the cultivated portion of the farm has been thoroughly plowed and subsoiled ; indeed, Prof. Mapes informed your committee that his fields had been subsoiled in many parts

to the depth of 30 inches, and the stones taken out. Many of the fields have been underdrained. Perhaps no farm in the vicinity of New-York has been more improved within the last five years than this one. Prof. Mapes moved on to this farm some five years since, during which time he has thoroughly subdued most of it. Many thousand loads of stone have been removed from the fields and used for roads, walks, and fences.

The method of culture has fully established the economy of his management, indeed too much cannot be said in favor of Prof. Mapes' system of husbandry.

On the subject of manures he has exhibited great skill. The soil, in the first place, has been put in an exact balance for vegetable productions by the addition of the missing constituents, which have been ascertained by analysis in the Professor's laboratory. Your committee have been furnished by him with a statement of his method of preparing various kinds of manure. The stable manure of this farm he first mixes with a compost of salt marsh muck, decomposed, with a mixture of salt and quick lime; to this is added a portion of his improved superphosphate of lime, before the manure is applied to the soil. The stables at his barns are so constructed that seven half-cords of decomposed salt muck are placed once in every ten days in a trough 4 feet wide and 3 feet deep, passing the entire length of the stable, and immediately under the hind feet of the cattle and horses. The bedding of the stables, such as straw and coarse hay, is thrown over the trough, and overlays this dry and decomposed muck. The urine of the animals, as soon as voided, passes through the bedding down into the muck, before the animal heat has departed. The bedding is thus kept at all times dry, and the foul gases of the stable and urine are absorbed by the muck. When the animal lays down, the heat of the body assists the chemical changes going on between the muck and the urine. As often as once a day the solid dung is removed from the stables and thrown into a heap under an adjacent manure shed, supplied by eighteen times its bulk of muck, previously reduced to powder by the action of salt and lime mixed with it. Nineteen times the bulk of the manure is thus formed from the solid dung alone mixed

with muck. Every ten days the muck, charged with urine of the animals, is removed to the manure shed. It usually yields about seven half-cords, being about equal to the bulk arising from the solid manure. The two manures are then mixed together, and form a bulk thirty-six times as large as would be the natural result from the usual barn yard practice of most farmers.

The manure shed is so constructed that a cistern supplied with a pump, is located at its lowest end, receiving the drainage of the heap, which is pumped back upon the manure heap, by aid of a spout, every two days. Should the supply of drainage be deficient, water is passed into the cistern from the barn gutters, and then pumped on to the manure heap. Every part of the mass is thus kept moist without permitting the water and liquids to remain in a state of rest. A rapid decomposition of the manure follows this treatment. The atmosphere acts upon the ingredients, following the water in its downward course, without producing fire fanging of the manure. Prof. Mapes is of the opinion that this method of managing the manure heap is preferable to turning it over with a fork; the admixture and decomposition is more perfect. The presence of the decomposed muck secures the absorption of all the gases resulting from the decomposition. This renders the muck more equal in quality as a manure to the excretion of the animals.

The hog pens he constructs in a similar manner. The effect is to form an intimate division of the component parts of this manure, and render it suitable for garden use.

Prof. Mapes uses large quantities of manure. His compost manures are insufficient to supply the farm. He uses in addition much of his improved superphosphate of lime.

Prof. Mapes has established a manufactory of this article. Your committee went through it when they visited his farm. The composition of this manure is an invention of the professor; it has been used by him for some years past, producing extraordinary results. The composition is strictly in accordance with the chemical wants of the soil. He says that this manure meets the wants

of most soils nearer than any other before discovered. The quantity used is from 300 to 600 lbs. per acre; the cost is less than the cartage of an equal amount in force of stable manure, if brought for the distance of one mile.

When your committee visited the farm, they found nine acres of Indian corn growing, besides fields of oats, and potatoes. 73,000 Bergen and Dutch cabbages, were among the curiosities of this farm. Five hundred pounds per acre of the improved superphosphate of lime was applied to the cabbage fields. His garden crops were certainly very large. The committee saw raspberry branches which had grown 19 feet during the current season. Three hundred glass sashes had been put up in his garden; beets, parsnips, carrots, lettuce, radishes, onions, rhubarb, cauliflowers, brocoli, spinach, kale, caulo-rapas, were growing luxuriantly.

The modes of cultivation in some particulars were peculiar. Tomatoes and Lima beans were shortened in, to render them earlier, and with good results. A bed of Spanish peppers was bearing three distinct sets of pods, the effect of three different manurings; the plants stood about two feet apart, on an average. Your committee saw 30 peppers growing on many of the single plants.

The garden and small fruits occupy about thirty acres, besides the usual farm crops raised in adjacent fields. The vineyard contains about 1,200 bearing vines of the Catawba, Isabella, Norton's Seedling, and several other varieties.

Four hundred dwarf pear trees grafted on the quince, and embracing most of the improved varieties, were growing in his orchard.

Eight thousand raspberry plants, together with strawberries, including Hovey's Seedling, Boston Pine, British Queen, Prince Albert, and many other varieties.

The larger fruits were in fine order, consisting of apples, plums, peaches, nectarines and apricots, free from insects. The bark of the trees appeared smooth and healthy.

The gooseberries, of which the Professor has choice varieties, looked remarkably well.

During the last year he has raised and sold garden seeds to the amount of \$600. Of cold-frame plants \$1,800 were sold from the garden.

When your committee visited the farm, there was growing four acres of Stowell's Ever-green corn, the seed of which sold last year at the rate of \$1 per quart ; three acres of beets, four acres of potatoes, (Mammoth Nutmeg variety,) four acres of carrots and oats together. The method of cultivation was as follows : The field was first plowed and subsoiled deep for root crops ; the oats were first sowed broad-cast and harrowed in ; the field was then laid off in drills suitable for a carrot crop, the seed was then sown, the oats and carrots grew up together, but the oats shaded the carrots so, that when they were cradled off the field, the carrots then first commenced a vigorous growth, and produced a heavy crop for the fall gathering. One thousand poles of Lima beans.

Your committee have been enabled to obtain a statistical account of the productions of this farm from year to year. Prof. Mapes went on the farm about five years since. The cost of the farm thus far, has been upwards of sixteen thousand dollars ; this has been all paid for by the produce of the farm alone, besides stocking the farm and procuring farming utensils, and fencing.

The Professor encourages the appearance of birds upon his farm and gardens. On an apple tree, adjacent to his dwelling house, were put up four wren boxes, each of which were inhabited by a family. He had put up about 300 of these boxes in his orchard, every one of which was occupied. The birds are complete scavengers among insects. Take it all in all, your committee are satisfied that Prof. Mapes' method of cultivation is superior to most other agriculturists ; his grape vines and peach trees grow luxuriant. The improved super-phosphate of lime is evidently an extraordinary manure ; its effects are marked, the Professor combining science with practical husbandry in an unusual degree, and its results are uncommonly great.

Your committee unanimously award to Prof. James J. Mapes the premium of a silver cup, for the best cultivated farm of 25 acres.

A. NASH,
JAS. DE. PEYSTER,
DAVID BANKS,
THOMAS BELL,
NICHOLAS WYCKOFF,
Committee.

JOHN W. CHAMBERS, *Sec'y.*

FARM OF LEWIS MORRIS.

Your committee respectfully report, that on the 10th day of July, 1852, they visited the farm of Col. Lewis Morris, of Morrisania, Westchester county, N. Y.

This farm consists of 200 acres of land, 55 of which is salt peat marsh land. It is located on the north side of Harlem river, opposite the Island of New-York, on the east side of the road running from the 3d Avenue in New-York city to West Farms, and formerly the old post road to Boston. The domains are a part of the ancient grant of Morrisania, and for many generations past have been owned in the Morris family, who were the original grantees under the British crown.

The upland of the farm in question is mostly a yellow loam, resting upon mica slate rock, with occasionally a bed and stratification of limestone; the land generally declines to the south and east, and probably no part of it lies higher than 250 feet above tide water in the Harlem river.

The first object at the mansion house of Col. Morris, which gained the admiration of your committee, were the shade trees which had been planted around it, and which formed a delightful retreat in summer. In front and around the house were standing a Sugar maple, *Acer saccharinum*; a Bass-wood or Lime tree,

Tilia americana ; a Silver maple, *Acer eriocarpum* ; a beech tree, *Fagus americana* ; together with one or two oaks, *Quercus rubra* ; and a Balm of Gilead tree, *Icica guianensis* ; the only species of poplar which your committee deem worth the trouble of growing and cultivation. These are all American forest trees of the native growth, and far superior, in the opinion of your committee, as shade trees, to any shade tree that has been introduced into this country of an exotic growth. Trees for ornament and usefulness are found in our American forests, in numbers far beyond computation ; they have only to be taken up when small and transplanted to the grounds immediately around our dwellings, to form the most elegant and useful artificial groves, and at a trifling expense. Almost every degree of latitude and longitude on the globe possesses a system of vegetation more or less peculiar to itself, and adapted to the natural exigencies of their location. While we have so many kinds of shade trees of our own native growth unsurpassed in beauty and usefulness, why run around the world to bring hither the unhealthy ailanthus and the offensive poplar.

The Sugar maple and the Beech are trees peculiarly free from insects, and abounding in leaves of a delicate and deep green, they are everywhere to be found, and adapted to the soil and climate of all regions visited by frost or snows.

The farm of Col. Morris is located so near the city of New-York, that it is cultivated with great advantage mostly for a market garden, it furnishes feed for a large number of cows, which are used for dairy purposes, and the supply of milk which is daily sold in the New-York market.

The details of the operations of this farm have been furnished by the proprietor himself, and your committee have incorporated the same into this report ; these details speak for themselves.

MORISANIA, Dec., 27, 1852.

GENTLEMEN :

This farm is worked on shares by Mr. Wm. Baity. It contains about 200 acres, of which 55 are salt marsh. Thirty acres are planted with apple trees, which do not now prove productive on account of the thickly settled neighborhood which is found to

be more destructive of fruit than all other causes combined. The mansion house grounds contain about 12 acres, which are covered with shade and fruit trees, principally sugar maple, bass wood, elm, weeping willow, cherry, apples and pears.

The produce of hay upon the lawn was increased one third, and the quality much improved by top dressing it this spring, with a compost of a ton of guano, combined with three times its bulk of charcoal dust.

The farm is divided exclusive of the three orchards into 11 fields. No. 1, 2, 3, 4 and 5 containing 49 acres of a fine sandy loam are cultivated as a market garden. No. 6 containing 12 acres of a light sandy loam produces when highly manured, fair crops of tomatoes and turnips. No 8 and 9 containing 16 acres, are cut for hay. No 10 and 11 containing 16 acres are used as pasture lots. There are on two of the fields ponds covering about an acre each fed by springs.

Besides the manure made upon the place, that of a stable in which are kept about 200 horses situated within a mile of the farm is also used. The cost of this exclusive of transportation for the year ending Oct. 1, 1852 was \$760.

The live stock consists of 2 yoke of oxen, 23 cows, 6 yearlings 1 bull, 9 horses of which there was a mare with 2 colts sired by Trustee, a horse of celebrity, 18 hogs, 50 geese and 100 fowls. The cows are a produce of the cross between the Durham and native. The hogs that of the Berkshire and Grass.

The system of culture pursued by Mr. Baity is as follows: as soon as the frost is sufficiently out to admit working the ground, he commences plowing &c., in the usual mode of planting first parsnips, prefers the cut parsnip. Prepares hot beds of which he uses about 60 frames, from the middle Jan., to 1st Feb. Raises salad plants from seed planted in the open ground about 1st of Sep., transplants them into frames late in the fall before the ground freezes, then transplants them to the hot beds from the middle of Jan, to Feb., they are usually fit for use in about four weeks from being transplanted to the hot beds. Sows seeds from plants in the hot beds from 1 Feb. Cabbage, tomatoes, egg-plant

&c., they are fit to transplant as soon as the season admits, thin them out by transplanting the plants of one bed into 20 others, say 5 inches apart for tomatoes and egg-plants. Spreads the manure broad cast and ploughs it in. Plants first the turnip beet which produces early, abundantly and of good quality. For late beets, the long quaker beet and the old fashioned blood. For early cabbage, prefers the heartshape and French green, for late the savoy and drum-head. Plants the pink eye potatoes for early, usually in drills, prepares drills on account of economy of labor, plants as early as possible, sent some to market this year on the 2d of July. For late potatoes, plants the mercers sometimes as late as the 20th of May. Sows celery seed upon the best land in a moist location well manured, as early as the season will admit, transplants it according to the season in June or July for the crop, placing the plants 5 inches apart in the rows and the rows 4 feet apart; cultivates it in the usual mode. It is usually ready for market about 1st of Oct. Plants spinach in the open fields, both ways broad cast and in drills about 25th Aug. till 15 Oct. It is usually fit to cut in about 6 weeks from the time of planting. In the fall covers the crop remaining in the ground with litter, sedge &c., usually cuts it through the winter fall and spring. After a crop of spinach, the ground is fit the following year for any other crop without additional manure. Prefers, whenever circumstances will admit to manure and plough it in, in the fall. Is careful to plant successive crops on the same ground.

The following produce of the farm was sold during the year ending October 1st, 1852:

590	bushels	potatoes.
1860	do	tomatoes.
536	do	beets.
987	do	turnips.
197	do	Lima beans.
553	do	carrots.
255	do	onions.
306	do	parsnips.
27	do	peas.
569	barrels	spinach.
67	do	sprouts.

286	dozen	egg plants.
1573	do	cabbages.
103	do	salsify.
2075	do	salad.
1100	do	cucumbers.
106	do	squashes.
1595	dozen ears	sweet corn.
393	dozen bunches	celery.
287	bunches	asparagus.
587	do	rhubarb.
6070	do	radishes.
1800		pickles.

The quantity of milk sold amounted to 41,795 quarts. There are employed upon the farm 15 hands, at an average cost of \$10 each per month.

The sales for the year, ending 1st Oct., amounted to	\$6,229 87
The amount paid for labor is.....	\$1,500 00
The amount paid for manure,.....	760 00
The amount paid for seed,.....	125 00
The amount paid for feed for catile and horses,.....	525 00
	<hr/> 2,910 00

Leaving a net balance to the credit of the farm, \$3,319 87

Your committee walked over this farm, and were delighted with the perfect system of culture adopted by its proprietor. Each field was devoted to its appropriate crop of vegetables. There were growing, when your committee visited the farm, 16 acres of potatoes, (Mercer and Dykeman varieties,) 14 acres of Indian corn, 5 acres of tomatoes, 2 acres of parsnips, 2 acres of beets, 3 acres of carrots, $1\frac{1}{2}$ acres of onions, $\frac{1}{2}$ acre of cucumbers, $\frac{1}{2}$ acre of egg plants, $1\frac{1}{2}$ acres of cabbage, $\frac{3}{4}$ acre of Lima beans, $\frac{1}{4}$ acre of squashes, $\frac{1}{8}$ acre of parsley, sweet marjoram and sage; 1 acre had been devoted to rhubarb, which had been cut off previous to your committee visiting the farm.

Col. Morris is a gentleman who owns extensive plantations in South Carolina, which are cultivated under his immediate super-

vision ; necessarily, from six to eight months a year is spent in the southern country. His farm was not entered for competition, only as a market garden. Your committee believe this to be one of the most valuable that has come under their observation ; the mansion house is delightfully situated, overlooking much of the waters of the East and Harlem rivers, while the access to the business portions of New-York, is easy, and nearly every hour during the day. Col. Morris entertained your committee, with cordial good will and hospitality ; his manners are strongly imbued with those of the old school, which confers ease and dignity upon the possessor, and pleasure to his guests.

Your committee unanimously recommend, a premium of a silver cup, to Col. Morris, for the best market garden.

A. NASH,
DAVID BANKS,
J. DE PEYSTER,
THOS. BELL,
NICHOLAS WYCKOFF,
Committee.

JOHN W. CHAMBERS, *Sec'y.*

FARM OF HENRY ROBINSON.

Your committee respectfully report, that on the 8th day of July, 1852, pursuant to request, they visited the farm of Capt. Henry Robinson, at Newburgh, Orange Co., N. Y.

This farm consists of 250 acres of land ; it lies on the westerly bank of the Hudson river, within the precincts of the village of Newburgh, and immediately south of, and adjacent to Gen. Washington's head-quarters.

The soil of this farm, is, in a great degree, a lime-stone formation, with a mixture of clay, resting on clay slate, and a bituminous lime-stone.

Capt. Robinson entered 18 acres of wheat for competition, and to view this crop, was the principal object of your committee in

isiting this farm ; but, nevertheless, they were invited to walk over his grounds, and to inspect his method of farming and husbandry.

The first object which attracted the observation of your committee, was the delightful and romantic location of this farm ; it descends towards the Newburgh bay, the Highlands, with the vast gorge through which the Hudson river rolls itself towards the ocean, is seen to great advantage from many points on Capt. Robinson's domains, while on the north and east, the ranges of the Green mountains, the broken lands of Putnam and Dutchess counties, and a long thread of the stream above Newburgh, are brought within a simultaneous vision. Steamboats, vessels, and indeed the whole commerce of the Hudson, are brought directly in review at Capt. Robinson's mansion; probably no location of a farm in the United States, excels this in elegant and enchanting views.

While Gen. Washington and his army lay encamped at Newburgh, during the revolutionary war, their tents were said to have occupied the south and eastern part of the farm. Gen. Washington, and many of his officers, are reported to have declared, that the location of this farm, was superior to any grounds they had seen. Your committee are inclined to ratify this opinion.

The principal business of Capt. Robinson, is dairying ; he keeps 50 cows, whose milk is converted into butter. The dairy house is made upon a side hill, three fourths of a mile from the river ; first, a large cellar was dug out, and a floor laid in brick and mortar, with an underdrain ; the walls are raised in the form of a dome, until they meet at the center at the top, forming a roof ; in this is inserted a large canopy of glass, or what is called in the decks of vessels, a bull's eye ; the whole of this structure is covered with green sod, except the small space for admitting the light on the top ; this forms a room mostly underground, cool and capacious, where the milk is strained in vessels, daily, for making cream ; lower down the hill, and adjacent to the milk room, is another room, or second compartment, built like the first, and used for churning ; here are placed, in an upright position, four large barrel churns, into which the cream is daily placed, and the churning is done by means of cranks, attached to a shaft, which

extends through the wall into an open lot, and worked by horse power.

Adjacent, but lower down the hill, is a well, and an open shed, capable of being closed in winter, where the pails, churns, and milk-pans are cleansed with hot water, by means of a boiler, set in an arch ; the whole arrangement is superior as a model house for a dairy, and from the appearance, the method of conducting the dairy operations, was as neat and perfect, as the excellency of the arrangements was complete.

Capt. Robinson's butter is sought for at his dairy house, and taken for many of the packet ships sailing from New-York.

After your committee had inspected the dairy-house, they were invited to see the barn and stables where the cows are kept, and sheltered during the winter. Capt. Robinson has adopted a plan of stabling for his milch cows, which your committee would respectfully recommend to dairy keepers, as a pattern ; first, he raises a platform, not unlike a poop deck to a ship, from 6 to 12 inches high, on the stable floor, running the whole length of the manger, which is of a sufficient width, to enable the animal, when fastened, to stand upon it and feed with ease, as well as lie down and rest, but the width is so much contracted, that the urine and excrement of the animal fall over on to the floor below, leaving the surface of the platform clean and dry, which is a very desirable state of things for the milker, as well as to ensure cleanliness in the milk.

On the grounds west of the mansion house, a meadow field is located ; the water of all the region about his farm, is more or less clouded with the lime and clay ; to remedy this inconvenience, Capt. Robinson first sunk a cellar 12 feet deep, amidst springs of water ; this cellar was 10 feet wide, and about 12 to 15 feet in length ; the bottom was laid with hydraulic cement and flat stone, the walls were raised with mason work laid in cement. This forms a large reservoir or cistern ; by adjustment, so much of the walls are left open as to permit a flow of water freely into this cistern, which fills itself to the brim ; over this is erected a tight house, to exclude animals, and, in a great degree, the light

and the air ; a lead pipe now conveys the water down the hill to the kitchen of his mansion house, and supplies other buildings, of which a stream is kept constantly flowing ; in the reservoir, the water settles as clear as crystal.

In the vicinity of his house, Capt. Robinson has preserved and planted a grove of young and thrifty trees ; these surround two fish ponds, into which he has introduced a great many varieties of fish, which are fed from the hand of the owner ; while he was enjoying his piscatory amusement, he found that various tribes of birds took up their residence in the grove ; on these he bestowed a share of his kindness, and in the course of some two or three years, the songsters had become domesticated, recognising the hand that fed them, until they would alight upon and around his person ; among the different families of the feathered tribe, there soon appeared many black-birds, who recognized their benefactor, by utterly abstaining from touching a hill of corn or grain, planted or growing on his farm. The birds knew their owner, and at least they were not guilty of ingratitude to their friend.

Your committee much regret that Capt. Robinson did not enter his farm for competition. His 15 acres of Indian corn looked remarkably well, as did his grass lands and field crops. They noticed with pleasure that Capt. Robinson kept his fields free from weeds and brambles ; the lands were cultivated clean, up to the fences. The Captain, although a sailor from his youth, and has fought many battles of his country on the ocean, yet understands elegant and useful farming.

The wheat crop was growing, in two fields, one of 15 acres, the other of 3 acres, making 18 acres in all. The wheat was approaching the time of harvesting, when your committee was on their visit ; it certainly looked extraordinary well. The straw was clean, of a bright gold color ; no mildew or blight had made its appearance ; the heads of the wheat were large and full, without smut, or any other blemish ; he has since communicated to your committee, his method of cultivating his wheat crop, and its results, which are as follows :

NEWBURGH, Dec. 20, 1852.

GENTLEMEN :

The eighteen acres of wheat in Newburgh, Orange county, which the agricultural committee of the American Institute, awarded me the premium on, was cultivated as follows :

The soil was loam and gravel, and had been an old pasture lot. It had been manured, plowed, the sod inverted, and planted with corn; the following spring sowed with oats, (without manure,) and in the fall was manured with 23 loads of compost to the acre, composed of barn manure, leached ashes, offals, and different kinds of rubbish, which was turned over once, before carrying on the fields; and when ammonia was discovered, it was strewed over with common salt and plaster of Paris; after plowing, it was sowed with 20 bushels of quick lime per acre, carefully slacked, and well harrowed, (the same quantity was sown on the corn crop,) it was then sowed with $2\frac{1}{2}$ bushels of Genesee white short chaff wheat, to the acre, and thickly seeded down with timothy, and finished by rolling. It was all sown by the 3d of September. The produce was 35 bushels to the acre, and weighed $61\frac{1}{4}$ lbs., which was half a pound less than our general average; the season being remarkably dry may account for it. Three acres of the above, was in a separate field; the cultivation was the same, with the exception, that in October, it had a light top dressing of ashes, from the burning of weeds, brush, &c.; and in April, we sowed 150 lbs. of nitrate of potash on one-half, and 150 lbs. nitrate of soda on the other, as an experiment. The wheat grew remarkably tall and fine; could not discover any difference between the different salts, and produced $42\frac{1}{2}$ bushels to the acre, weighing 62 lbs. I was therefore amply paid for the expense of nitrates, but as the three acres were not seeded, it may not be considered strictly a fair trial.

It may be proper to add, that we plow deep, say 10 inches, the mould board of our plows are three inches deeper than the ordinary plows; it takes three horses, or two yoke of cattle to plow with them, to their full depth. Our harrows correspond with the plows. We are not alarmed at turning up the sub-soil, as we

find no injurious effects from it, but are led to believe that it is beneficial.

These plows are made by the celebrated makers, Minor, Horton, & Co., Peekskill, we find them of less draft than any other plow, fairly tested by the dynamometer kept for that purpose; lightness of draft is considered all important; we never plough without the coulter, and that kept sharp.

Very respectfully,

Your obed't humble serv't,

HENRY ROBINSON.

Your committee unanimously recommend the award of a silver cup to Capt. Henry Robinson, for the best field of wheat.

A. NASH,
DAVID BANKS,
JAS. DE PEYSTER,
THOS. BELL,
NICHOLAS WYCKOFF,
Committee.

JOHN W. CHAMBERS, *Secretary.*

FARM OF JAS. J. SCOFIELD.

Your committee respectfully report that on the 20th day of September, 1852, by request, they visited the farm of Jas. J. Scofield, Esq., at Morristown, N. J.

He entered his quince orchard for premium. While your committee was at the farm of Mr. Scofield, they were invited to inspect a field of carrots.

Mr. Scofield's farm is situated within the precincts of Morris town, delightfully and healthily located.

Mr. Scofield is a gentleman who follows the profession and practice of the law, and has, by his industry and talents, raised himself to an eminent position in this branch of professional life.

Nevertheless while plowing with Coke on Littleton, and Fearne on Remainders, he occasionally lends a hand to plough the fields and cultivate his mother earth, which yields him a bountiful return.

The committee found Mr. Scofield and his lady hospitable and generous in their entertainments. He has communicated to your committee substantially what they deem necessary to constitute their report, and the communication is herewith appended.

The crop of fruit exhibited to your committee by Mr. Scofield, was superior to any they had seen. The quinces were indeed a remarkable production; the trees were healthy, and the fruit bearing qualities were very great. Climate and soil, no doubt, have much to do with the quantity as well as the quality of the fruit which the trees yield.

Morristown is situated in a region of country eminently adapted to the growth of fruit. The soil lies warm and deep over a bed of rocks of a primitive formation.

The country is high and rolling. It enjoys a pure atmosphere, free from noxious moisture, and the deleterious effects of the air contaminated by vapors from low grounds.

GENTLEMEN :

The committee on agriculture having requested from me a statement in relation to the mode of culture and the production of my quinces and root crops, in pursuance of this, I will first give you such statement in relation to the quinces.

The soil is a friable, clayey loam of light upland, that stands the drought well.

This season being very dry, was unfavorable to quinces even on such soil. I have two or three acres of quinces, but the larger part being young trees, I will confine my statements to $\frac{6.2}{100}$ acres of the oldest, largest, and most productive.

The trees are in rows 12 feet apart, and 7 to 8 feet distant in the row, making 348 trees on this quantity of ground. My principal manure is swamp muck mixed with barn-yard manure, say

one of yard manure and five of muck, and of this I have put on the $\frac{6.2}{100}$ acres probably 15 loads a year since I set out the trees, some six or seven years since, the land being in good condition when the trees were set out. During that time I have washed the bark of the trunk twice, once with sal soda, 1 lb. to 4 gallons of water, and another washing with soft soap diluted in water, in consequence the bark is clean and smooth. I trim out all unnecessary wood every winter, in February, and use the branches taken off for cuttings in my nursery. The best trees had two or three hundred on each, but the whole product of good, merchantable quinces, was 22,980, which averaged about \$1 per 100. I sent them away in barrels; 175 of the largest would fill a flour barrel. I had seven barrels, each of which was filled with that number or under.

The most profitable part of the crop to me has been the growing of young quince trees from the cuttings. I have sold a great many this fall set out from the cuttings four years ago next spring, and have now more than three thousand more for sale, a great many of them having borne fruit in the nursery last season. I had, last season, one tree three years old from the cutting that had eighty fine quinces on.

I will now give you a statement of my carrot crop, including cost, mode of culture, and product :

I raised one $\frac{1}{4}$ acres of white Belgium carrots. First plowing and subsoiling 3 days, \$2.50,.....	\$7 50
Second plowing, harrowing and rolling, 2 days,.....	5 00
Forty loads of swamp muck with barn-yard manure, decomposed, 1 load of barn-yard to 4 of muck, 50 cents per load,.....	20 00
Seed \$1, planting with a machine less than a day \$1,.	2 00
First hoeing, 10 days of boys and 5 of men,	15 00
Second hoeing and thinning do,	15 00
Third hoeing,	12 00
Three times plowing with small subsoil plow,	6 00
Three hundred pounds of guano, sown broad-cast.....	7 50
Gathering in the crop,	12 00

Cost of selling and freight to Newark,.....	37 00
Interest on the value of lands \$200 per acre,	15 00
	<hr/>
	\$154 00
Product, 1,233 bushels of carrots which I sell readily at New-York in quantities, for horse feed, at 37½	
cents,	\$162 37
Cost as above,.....	154 00
	<hr/>
	<u>\$208 37</u>

They were sowed the 1st of June, and gathered from the 10th to the 14th of November, and the product was much reduced by the grasshopper eating and destroying parts of rows when they first came up. We measured the product of one square rod, in the middle of the field, and it yielded at the rate of 1,330 bushels to the acre. There is no difficulty in raising 1,000 bushels to the acre on first rate land, well manured and tilled.

The price is better this year than usual, on account of the scarcity of hay. The land, I suppose, is in much better condition than it was before the crop was placed on it.

A fair estimate of expense is \$100 per acre for high manuring and good tilling, and then with good land the probable product would be 1,000 bushels at 20 cents, \$200, leaving a profit of \$100 per acre; and when I put the value at 20 cents per bushel, I mean the value to the farmer himself, for the purpose of feeding cows, horses, and fattening cattle.

Yours respectfully,

JAMES J. SCOFIELD.

Your committee unanimously recommend that a premium of a silver cup be awarded to Mr. Scofield for the best orchard of quinces seen by your committee.

A. NASH,
DAVID BANKS,
JAMES DE PEYSTER,
THOMAS BELL,
NICHOLAS WYCKOFF,

JOHN W. CHAMBERS, *Sec'y.*

Committee.

FARM OF THOMAS SHILLINGSFORD.

Your committee respectfully report that on the 17th day of July last, they visited the farm of Thomas Shillingsford Esq. of the town of Clinton, Essex Co., N. J., to view a crop of Indian corn at his request.

The soil of this farm is a debris of the volcanic formations which run along the west side of the Hudson river forming the palisade rocks, and is the basis of a large portion of the soils, and earth through the central portions of the upland in New-Jersey.

The farm itself is situated on a swelling ridge of land extending south and west of Newark. The soil is largely argillaceous, hard, tenacious in the extreme, and filled with innumerable quantity of stone, mostly of the volcanic green stone formation, slate, flint and boulder green stones are mixed in strange confusion and show themselves in great abundance, wherever the soil on Mr. Shillingsford farm is turned up: his lands for a long series of years prior to the recent occupation of his farm by himself, was rented out to tenants whose practice is, as a general rule, to take off every thing from the farm in the shape of fertility, and to carry nothing on in return, his farm appeared to your committee, to have been completely exhausted on the surface wherever Mr. Shillingsford had not commenced the recent and improved methods of husbandry. His system is first to plow and subsoil to the depth of 24 inches, the stone are taken out of the ground, he then plies it freely with muck which has been composted in his barn yard, the next operation is to apply a heavy dressing of quick lime; this renders the land healthy and fertile for cultivation: the ground crops and Indian corn are now introduced to the soil, the subsoiling and the muck afford the necessary facilities for the tap-roots to run down and drain their nutriment from the improved soil, to the lowest depths required for their growth.

The field of Indian corn on which Mr. Shillingsford invited your committee to give their particular attention, consisted of about 8 acres, it had been plowed up twice before planting in

the spring, the hills were 4 feet apart, no manure was put into the hills except the improved superphosphate of lime; this was used at the rate of 3 oz., for each hill of corn making about 300 lbs. per acre, he planted for four stalks of corn to each hill. When your committee visited this farm the growth of this corn was surprisingly great, it was of the darkest green color, unusually healthy and vigorous in its appearance, it yielded when gathered 175 bushels of ears to the acre, making about 85 bushels of shelled corn.

The field presented to your committee the effects of three methods of cultivation; first the improved superphosphate of lime alone had been applied to the whole field, except about one third of an acre; next some 8 rows of corn had been manured in the hill from the hog pen alone, and some 4 or 5 rows of corn had been planted and grown without manure of any kind; the last method of cultivation presented a sorry appearance indeed for a crop; the corn manured from the hog pen was deficient, on an average not more than two stalks appeared in the hills, and these were oftentimes assailed by the grub worm, giving them a sickly and unhealthy appearance. The stalks of corn which had been manured by the improved superphosphate of lime were free from disease, and had not been attacked by the grub worm, or any other enemy.

Adjacent to this field of corn was growing a field of carrots which had been dressed with the improved superphosphate of lime at the rate of about 300 lbs. per acre; we have since been informed that Mr. Shillingsford gathered 900 bushels of carrots from this field which was about $\frac{3}{4}$ of an acre of ground; the sorts were Red altringham and White belgrain in about equal quantities, they were sown early in the spring and hoed sufficiently to keep them entirely free from weeds.

In a field adjacent to his house, Mr. Shillingsford exhibited to your committee, 3 acres of timothy, it was of an uncommon growth; he informed your committee that in the spring he sowed on this field about 600 lbs of improved superphosphate of lime, intending to plow the same under for a ground crop, that owing to some delay the field lay after the manuring about a fortnight, and to his

great surprise a rapid growth of grass appeared, when he had not thought of mowing the grounds for some years before. This grass was ready for cutting, the growth indicated a yield of 2 tons per acre.

My Shillingsford's stock was full bred consisting of 2 yoke of oxen, 2 bulls, 7 cows, 10 yearlings, 2 horses and 6 to 8 swine, which exhibited a healthy and vigorous growth, he also had a yard of superior dunghill fowls.

The general economy of his farm, and buildings, showed careful management, and good thrift. The farm itself consisted of about 50 acres, it was almost a desert wilderness when he went on it; now it's a smiling domain.

Your committee unanimously recommend Mr. Shillingsford a premium of a silver medal, for the best field of Indian corn.

Jan. 1, 1853.

A. NASH,
JAMES DE PEYSTER,
DAVID BANKS,
THOMAS BELL,
NICHOLAS WYCKOFF.

Committee.

JOHN W. CHAMBERS, *Secretary.*

FARM OF PETER PIRNIE.

Your committee respectfully report, that on the 30th day of June, 1852, they visited the farm of Peter Pirnie, Esq., situated in the town of East Chester, in the county of Westchester, New-York.

This farm is about 20 miles from the city of New-York, about one mile east of Bronxville, on the Harlem railroad; it consists of 85 acres. The soil of this farm is fertile and warm; it lies upon a rock formation of granite and mica slate, with occasional beds of limestone. Twenty-five acres of this farm is in wood land,

consisting principally of oak, hickory and chestnut. The crops growing at the time your committee visited it, were 25 acres of grass for hay, 8 acres of Indian corn, 4 acres of potatoes, $5\frac{1}{2}$ acres of wheat, 5 acres of oats; the balance was pasture and fruit orchards.

Mr. Pirnie had growing on this farm 300 apple trees, most of which had been grafted with choice varieties of fruit. He had 40 pear trees, 80 cherry trees, 150 peach trees, besides a large number of plum trees.

The garden which surrounded his house, consisted of $1\frac{1}{2}$ acres of ground, in which were growing and in bearing 4,000 strawberry plants; these consisted of Hovey's Seedling, Burr's Mammoth, Prince Albert, and Swainstone's Seedling, 1,000 of each. In the garden was also a grape arbor 150 feet long, 10 feet high, and 8 feet wide, entirely covered with vines of the Isabella and Catawba varieties; which were thrifty and loaded with clusters. They had been pruned judiciously.

In his green-house were growing a Black Hamburg and a Golden Chasselas vine; these were both flourishing and healthy, made so by throwing a full supply of light and fresh air daily upon the vines. He uses the flour of sulphur freely, to prevent mildew, and the means of destroying the pyrales and other insects on his vines. This house was constructed for preserving about 2,000 plants of which 50 were camelias of the first kinds.

The stock kept by Mr. Pirnie on this farm consisted of 6 cows, 4 horses, 1 pair oxen, 5 young cattle, 6 sheep and 12 hogs. He informed your committee that he cut last year 60 tons of hay. He raised 400 bushels of Indian corn, 200 bushels of potatoes. He usually makes in his barn-yard from 200 to 300 loads of manure and compost.

On this farm had been erected three miles of stone wall, which forms an excellent fencing. The roads which passes by Mr. Pirnie's house towards White Plains, as well as that which runs west to Scarsdale, are lined with a thrifty growth of locust trees, *Robinia pseudacacia*. A fine grove of these trees were also growing upon his farm, covering a rocky swell. Of these locust trees, 823

measured over three feet in circumference, and formed a valuable stock of timber. These trees had been planted along the sides of the highways running through Mr. Pirnie's farm by some of the former proprietors, and now have obtained a growth both useful for ornament and timber, and added much to the appearance of the farm.

Your committee found Mr. Pirnie's farm well cultivated, his buildings in a state of fine order, delightfully located on a high rolling ground. Much pains had been taken to surround it with fruit and ornamental trees.

The water to supply the house was furnished by a well, and was reached at 30 feet from the surface, where springs flowed out from mica slate and limestone formations.

The location of Mr. Pirnie's farm is in many respects superior ; no swamp or wet grounds are found on his lands. The mansion house is upon the road direct from White Plains to New-York, and at the junction of the road from Scarsdale.

Mr. and Mrs. Pirnie entertained your committee with cordiality and generous hospitality. The healthy and delightful location of Mr. Pirnie's mansion, contributed much to the enjoyment of the occasion.

Your committee respectfully recommend a premium of a set of "The Working Farmer" to Mr. Pirnie, for the groves of locust trees, and the good cultivation of his farm.

A. NASH,
DAVID BANKS,
JAS. DE PEYSTER,
THOMAS BELL,
NICHOLAS WYCKOFF,
A. CHANDLER,

Committee.

JOHN W. CHAMBERS, *Sec'y.*

Report on the Stone-dressing and Polishing Machines.

We, the undersigned, having been appointed a special committee by the premium committee of the twenty-fifth annual Fair of the American Institute, at the request of Mr. C. T. Shelton, president of the "Empire Stone-dressing Company of the city of New-York," to visit their works, foot of 28th, 29th and 30th streets, with a view of examining and reporting upon the operation and efficiency of their machinery, consisting of Charles Wilson's Patent Stone-dressing Machine, and Albert Eames' Patent Polishing Machine, which they offer in competition with any machine designed to produce the same results.

Your committee beg leave to report, that they have visited the works, and found the two machines in operation, and do not hesitate to pronounce them to be superior to anything of the kind within our knowledge, and in our opinion promise a revolution in the mode and manner of dressing and polishing stone from the rough to the finish, accomplishing the work with incredible expedition.

We therefore consider Charles Wilson, of Springfield, Mass., as entitled to a gold medal for the best Stone-dressing machine; and that Albert Eames, of Hartford, Conn., is entitled to a gold medal for the best Stone-polishing machine: which we respectfully submit.

New-York, Oct. 28, 1852.

JOHN A. BUNTING,
JOSEPH COWDIN,
Committee.

Report on Pirsson's Double Vacuum Steam Condenser.

The judges, to whom the subject of Pirsson's Double Vacuum Steam Condenser has been referred, respectfully report:

That this invention is well known to them all, in its general form and principle; that some of them have had opportunities for seeing it in actual use; and that abundant evidence has been exhibited to them of its complete success in practice. The principles on which this "Steam Condenser" is planned, consist, 1. In the condensation of the steam which has been employed in working an engine, and the collection of the water formed by its condensation, separate and apart from the water, by whose refrigerating effect the steam is condensed. And, 2: In performing this condensation in such a manner, that no cessation of the working of the engine shall take place, even should the part of the apparatus in which the steam is condensed, after leaving the engine, fail altogether, or should its action be partially deranged.

The first of these objects, is of great and universally admitted importance, whenever water holding saline matter in solution, and particularly when sea-water is the only description of that fluid which can be readily obtained. Various plans have been proposed for attaining this object, but so far as the undersigned know, none of them have come into general use, in consequence of their not having fulfilled the second of the above named purposes. Pirsson's Condenser, not only accomplishes all that has ever been anticipated by any of these plans, but accomplishes the second object so completely and effectually, that the utmost injury that it can experience, will do no more than reduce the engine to the state of one working in the ordinary manner, in which the water arising from the condensed steam is mixed, with that which has been employed in condensing it.

These two objects are accomplished; 1. By the use of a condenser, having the general form, character, and construction of that usually employed in steamers, which condenser is kept free by an air pump, in the usual manner, and

2. By placing within this condenser a system of tubes, into which the steam flows from the cylinder, and in which the vacuum is maintained by a smaller and separate pump, specially applied to this object. The water drawn off by this pump, is alone used in feeding the engine, while the water used in the outer condenser runs to waste.

Evidence has been laid before the undersigned, which has established the fact, that a condenser of this construction, has been in use, without accident, for a number of days, far exceeding the usual passages of marine steamers; that a partial defect in the tubes did not impair, in any way, the absolute efficiency of the engine; that such partial defect did no more than diminish the saving of fuel, which was the result of the use of the apparatus when in perfect order; that such partial defects are readily repaired, by the means, at the disposal of the engineers of the steamers. The advantages which this condenser presents to steam navigation, are, therefore: the saving of a large proportion of the fuel, that is required when the boiler is fed by sea water, by an apparatus, which, at worst, will not, when out of order, involve the consumption of more fuel than would be necessary with the common condenser; and the great prolongation of the duration of boilers by feeding them with pure distilled water.

The undersigned, therefore, in consideration of these advantages, by which the cost of steam voyages may be *reduced*; their length increased, the capacity of cargo enlarged, the duration of the apparatus prolonged, recommend, that a gold medal, of the highest order, be conferred on Mr. Pirsson, by the American Institute.

New-York, 21st October, 1852.

J. W. AYRES,
JAS. RENWICK,
H. R. DUNHAM,
HORATIO ALLEN,

Judges.

Report of the Committee on Ray Premiums.

The committee appointed by the board of managers at the last annual fair, to decide on the respective merits of the claimants for the premiums offered by F. M. Ray, Esq., designed to improve the conveniences and safety of railroad travel, after devoting much time and attention to the subject referred to them, have presented the following report :

The proposition of Mr. Ray, which had been before the public several months before the opening of the fair, brought forward 110 competitors, presenting an array of inventive genius which was highly creditable. Mr. Ray's proposition was in the following words, viz :

F. M. Ray, Esq., in view of the many accidents occurring on railroads, and with a desire to promote the safety and comfort of railway passengers, offers for competition the following premiums. viz :

Fifteen hundred dollars for the best invention for preventing loss of life from collisions, and from the breaking of axles and wheels.

Eight hundred dollars for the best method of excluding dust from cars when in motion.

Four hundred dollars for the best railroad brake.

Three hundred dollars for the best sleeping or night seats for railroad cars.

The above premiums will be kept open for competition until the opening of the 25th annual fair, where the plans, drawings and models of inventions competing for them are expected to be on exhibition. No inventions already introduced to the public will be entitled to compete for the prizes. It must be understood that these inventions are to be such as can be adopted and put into general use ; the inventors in all cases retaining their right to patents.

The above will be left to the decision of competent judges to be appointed by a committee of the American Institute.

The subject was subsequently referred by the Institute to the Board of Managers; by whom unwearied pains were taken to obtain the services of competent gentlemen to serve as Judges, which eventually resulted in the appointment of those who have signed the following

REPORT.

To John A. Bunting, Esq.,
Chairman of Board of Managers.

The undersigned, a committee appointed by the American Institute, in conformity with the foregoing conditions, for the distribution of premiums offered by F. M. Ray, Esq., for the best method of preventing accidents and promoting safety and comfort on railroads, report:

That during the continuance of the fair of the American Institute, held in this city in October last, they critically examined the great number of inventions offered for competition, and selected from each class, such as, in their judgment, were entitled to the greatest consideration. A final selection and decision was, however, postponed, with the hope of obtaining the aid of actual experiment on some of the untried inventions. Since then the private occupations of the members of the committee have been such, that it has been a matter of great difficulty to get a sufficient number together to make a report, and it has consequently been delayed, very much beyond the wishes of all concerned.

In regard to the two first premiums offered of "\$1,500 for the best invention for preventing loss of life from collisions and from the breaking of axies and wheels," and "\$800 for the best method of excluding dust from cars when in motion," we regret to say, that although there were many very ingenious and highly creditable inventions offered, yet from doubts of their utility in actual service, and in the absence of sufficient actual experiment to establish their merits, we do not feel prepared to recommend any

one of them for adoption into general use, according to the tenor of the conditions of award.

Your committee can, therefore, under the existing circumstances, make no award of the two first prizes of \$1,500 and \$800 each.

The railroad brake exhibited by Mr. T. A. Stevens, of Burlington, Vt., (entry No. 1,407), best combines, in our opinion, the elements of efficiency, simplicity and cheapness, as well as general adaptation to railroad purposes. We therefore award to it the third premium of \$400.

Of the night seats exhibited, we have selected that of Samuel Hickox, of Buffalo, N. Y., (entry No. 303), as the best, under all circumstances, that we have seen. It answers well the purposes of either a day or night seat; it is not cumbersome or complicated, is free from most of the ordinary objections of night seats, and can be made at a very trifling increase of cost over the ordinary seat. We therefore award to it the fourth prize of \$300.

GEORGE STARK,
MADISON SLOAT,
WM. CUMMINGS,
J. R. TRIMBLE,
F. HUNGERFORD,

New-York, March 15, 1853.

Judges.

Report on the large Oxen, owned by G. F. Hastings.

The committee appointed by the American Institute, at the request of Mr. G. F. Hastings, to examine a yoke of oxen of extraordinary size, belonging to him, and now in the city of New-York, submit the following report :

That in discharging the duty assigned them, they have examined with care the oxen alluded to, and find them in regard to size, flesh and symmetry of form, truly of an extraordinary character. Various testimonials emanating from creditable sources, were also submitted to your committee, among which were the proceedings of the Rensselaer co. Agricultural society, the proceedings of the supervisors of Rensselaer co. at Troy, and also of the farmers and stock raisers of Washington co., together with testimonials from gentlemen of undoubted character, speaking of them in the highest terms of praise.

The oxen were bred in Hoosick, Rensselaer co. by Mr. Wm. M. Paddock, were worked and fattened by Mr. John Lee of Washington co., and are now owned by Mr. G. F. Hastings of the town of Jackson, Washington co. Their dams were sisters, they were both dropped on the same day, in the same yard, grew and worked together until they were five and a half years old, and were seven years old in the spring of 1852. Their treatment while worked was of the usual kind ; since which they have been fed on corn ground with the cob, hay, roots, and occasionally for a change on oats and corn ground together. They have uniformly been in good health, and are now growing and fattening as rapidly as can be expected for cattle of their age. It is the opinion of persons competent to judge, that they are now capable of improving largely in their weight.

Mr. Hastings states to us that they have not been weighed since they were four and a half years old, at which time they weighed between fifty and fifty five hundred pounds, and were then in nothing more than common working order. The reason given

by Mr. Hastings for not stating their present weight is, that while they are on exhibition he prefers leaving that to the conjecture of those who may examine them, as he considers, to use his own words, "That the person telling the first story, stands no chance."

Pedigree of the oxen, Amazon and Tornado.

Bred by Wm. M. Paddock, of Hoosick, N. Y ; fattened by John Lee of Cambridge, N. Y ; sired by a bull kept and owned by R. Gale of Hoosick, whose sire was "Young Nelson" by the bull "Nelson," which was a short horn Durham, imported from England by M. Bullock of Albany, for pedigree of which see English herd book.

Their dams were descended in a direct line from the Teeswater breed, imported by Cadwallader D. Colden, and bred by him: But owing to the careless manner that farmers have been in the habit of keeping their cattle, there can be no correct pedigree on this side made out. Their sires were full or pure breed of the above named stock, and their dams half blood, the remaining part native.

The above are the facts as near as they can be made out.

ROBERT S. LIVINGSTON,
GEORGE DICKEY,
THOMAS F. DE VOE,
THOMAS BELL,
A. CHANDLER,
HENRY MEIGS.

Committee.

GENERAL JEREMIAH JOHNSON.

We have placed at the commencement of this volume, a portrait of the late venerable chairman of our Board of Agriculture. He was well known to most of our members, and very few among those who were in the habit of meeting him at the Institute will be likely soon to lose a recollection of his cheerful countenance, the urbanity of his manners, or the earnestness with which he engaged in the subjects under consideration.

General Johnson descended from a purely Dutch ancestry, his immediate progenitors being among the earliest settlers of Long Island. Jeremias Remsen, son of Rem Jansen, to whom the General was nearly related, was born Sept. 10, 1675, and purchased the farm at the Wallabout, L. I., in 1694. On this farm General Johnson was born. It continued in the Remsen family for many years. Jeremiah Remsen, who married Jane, daughter of Martin R. Schenck, died without issue, Sept. 4, 1777, at the age of 63, and left the family estate to Barnet Johnson, the father of Jeremiah, who is the subject of this notice. Gen. Johnson had always lived on the same farm, and after an active, energetic and eventful life of 87 years duration, died on the place where he was born, and on the land which was owned and cultivated by his ancestors and himself, through the continuance of several generations. The house in which he died was built by himself in 1800.

General Johnson was familiar with many of the most thrilling events of our revolutionary war. Living on the shore of Wallabout bay, in view of the head quarters of the British forces, he daily saw the memorable prison ships as they lay moored before him, and also saw many of the bodies of the 14,000 martyrs, brought from these ships and slightly buried upon the beach-

where almost each succeeding surge of the sea exposed them to the naked view.

General Johnson was clerk of the consistory of the Dutch Reformed church for a period of forty years. In 1796 he became a trustee of the town of Brooklyn; in 1800 he was chosen a supervisor of the town, which station he held until about 1840, having been chairman of the board a large portion of the time. In those days men took office with a full knowledge of the duty and responsibilities assumed by them, and deliberated on the best interest of the public with great care, and the strictest integrity; the citizen felt that he was safe in such hands.

The tenacity with which the early settlers of "New Nederlandt," and many of their descendants, adhered to their simple and innocent habits, is very remarkable. It is within the recollection of several, who were in the habit of attending the meetings of the board of supervisors, to have seen Gen. Johnson presiding with a long pipe in his mouth, surrounded by other members addicted to the use of the weed, enjoying also the luxury of the tube in the midst of their deliberations. The General was elected a member of the Assembly in 1808, and again in 1809, in which station he discharged his duty to the entire satisfaction of his constituents.

General Johnson was fond of military life, and at the commencement of the war of 1812, took an active part in raising troops, &c. He was a brigadier general when the militia of the State of New-York were called into active service, took his post with alacrity, and was in command of Fort Green during the greater part of our military operations in that quarter. In 1837, he was elected mayor of Brooklyn, and again in 1838. He was one of the most faithful, prompt and indefatigable of public officers; his punctuality was proverbial. The hour of meeting for the common council was 3 o'clock, and promptly to the time the General was always in the chair, and ordered the roll to be called; if there was a quorum present the business went on, if not, the board stood adjourned to the next time of meeting. A portrait of the General, illustrative of his punctuality, is now hanging in the City Hall, Brooklyn; he is represented holding his watch, and pointing to the hands which had reached the hour of meeting.

He was again elected to the Assembly in 1840, and also in 1841 ; was elected president of the St. Nicholas Society of Nassau Island in 1848, and was respected and honored by all its members. The General made no pretensions to literature, and seldom wrote anything for the public eye ; he nevertheless wielded an efficient pen when his feelings were aroused, or his sense of justice and propriety were violated by official malpractices or the wrong doings of individuals. About the years 1831, '2 and '3, several essays from his pen, under the signature Joshua, made their appearance in some of the city papers, treating of the existing topics of the day, which were extensively read and applauded by sensible men.

General Johnson became a member of the American Institute in 1836, and was unanimously elected an honorary member in 1849. He served as chairman of the Board of Agriculture in that institution for several years, in which capacity he rendered essential service. When a member of the Assembly, in 1841, he was very active as chairman of the committee on agriculture, in completing and urging to its final passage the act for the encouragement of agriculture in the State of New-York, from the operations of which that department of labor has, and we hope will continue to derive lasting benefits.

Early in the spring of 1837, arrangements were made by the Institute for holding their first public exhibition of plowing and testing plows ; designed to ascertain the merits of the respective plows then before the public, and to excite the emulation of plowmen, by suitable rewards to those who should exhibit the greatest skill. In this the General took an active part, and tendered the use of a field on his farm for the purpose, which was accepted. The plowing took place on the 28th day of April, 1837, in presence of a large concourse of people who had assembled to witness it, very much to the satisfaction of all concerned. The company then repaired to the village hotel at Williamsburgh, when the awards were declared. On our way there, Gen. Johnson assured the writer of this notice, that the first iron plow ever used in the State of New-York was first put into the soil on the field where we had just been plowing. A large number of the persons assembled

partook of a repast, prepared at the hotel, at which Gen. Tallmadge, president of the Institute, presided, assisted by Gen. Johnson as vice-president. Addresses were made by gentlemen from various parts of the country, by Gen. Tallmadge, Col. William L. Stone and Gen. Johnson, who, at the close of his remarks, proposed the following toast in Dutch, which, as it embodies a historical fact, we insert here, with a translation. Gen. Johnson proposed the memory of,

“Joris Janse De Rappelje, Teunis Guysbert Bogart, ende Jeremiah Remse Vanderbeck, bowleiden van Waael in Nederlandt, die en de Waalleboght in Nieu Nederlandt de erste landt bowers waren, begeninde in het jaar 1625.”

Translation—“George Jansen De Rappelje, Tunis Guysbert Bogart, and Jeremiah Remsen Vanderbeck, farmers from Waael, in the Netherlands; they were the first men who began farming in the New Netherlands at the Wallabout, in the year 1625.”

The General subsequently attended many of our exhibitions of this kind, at which we always found him the first in the field, and the last to leave it. He was emphatically an extraordinary man, devoting himself with singular fidelity and promptness to whatever he undertook; his opinions were expressed with moderation and sincerity; as a public man, he was discerning and steady; as a partizan, temperate and honorable; as a christian, unobtrusive and confident.

General Johnson died on the 20th of October, 1852, in a perfectly composed and unclouded state of mind; at peace with all his fellow men, and with entire confidence in the saving power of the Redeemer. It was his particular request that his body might be borne to its final resting place, in a strictly private manner, entirely free from all display. In consequence of which the present General Duryea, as a testimony of respect for the deceased, issued an order announcing his death, from which we make the following extract: “It would be proper that this brigade should bear the remains of their old commander to the grave with every tribute of military honor, were it not his expressed desire, that without military or civic escort, by his family alone, this solemn duty should be performed.”

An immense concourse of friends and acquaintances assembled at his late residence on the 22d, to be present at the funeral services, which were conducted by ministers of the Reformed Dutch church, in an impressive and solemn manner. A chapter from the scriptures was read by the Rev. Mr. Strong, after which a very appropriate address was delivered by the Rev. Mr. Dwight, and the service was closed with prayer by the Rev. Mr. Greenleaf. The body was kept until the next day, when it was conveyed to Greenwood Cemetery, by the members of his family alone, and there deposited in its last resting place.

A. C.

Not long since the following original paper was handed to us. It is well authenticated, and as it contains an important historical fact, we have taken the liberty of putting it upon record here.

A. CHANDLER, Esq.,

Dear Sir,—A short time before the death of my mother (Feb., 1844,) she gave me this paper, and remarked, “your father and myself were walking in the neighborhood where the bones were scattered over the surface; some partly and others entirely uncovered. He remarked that it was a disgrace to the country. After walking a little farther, he said that he would have them collected. He left me and went to a neighboring house, where he found that there were several children. He made this agreement with the father, and under this agreement the bones were collected.”

B. AYCRIGG.

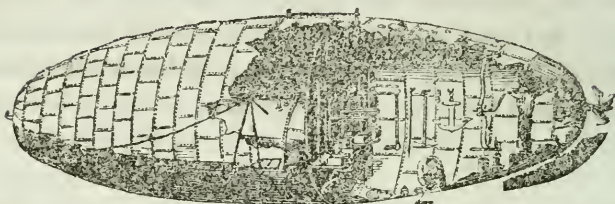
NEW-YORK, Nov. 28, 1853.

“WALLABOUT, LONG ISLAND, Aug. 24, 1805.

“I do hereby agree to collect all the human bones as far as may be without digging, about the shore and banks of this place, (buried from on board the prison ship Jersey during the revolution of America,) and deliver the same to Benjⁿ Aycrigg, at this place, at one cent per pound, within one year from this date.”

AMOS CHENEY.

Mr. L. Alexanders's Submarine Vessel.



This novel vessel was presented at our last Fair by the inventor, Mr. L. Alexander, and made two successful descents to the bottom of the river opposite Castle Garden, in presence of a large number of persons who had assembled for the purpose of witnessing the operation. Her last descent was made on the 28th day of October; she disappeared from the surface of the water at half past one o'clock with seven persons on board, and descended to the bottom in 35 feet of water. At the bottom the hatchway was opened, and continued open for one hour and ten minutes. During the time a small rock was broken, the pieces of which were brought to the surface. At the expiration of the time stated, the vessel ascended to the surface and the company landed, dry, and well pleased with the experiment. They testified that the vessel gave proof of capacity to make explorations in much greater depths of water. The cut is a very good representation of the vessel, showing a part of the interior.

Description of the Vessel.

The invention of the submarine Vessel is the application, upon a large scale, of the physical law to which the illustrious Mariotte has given his name, and which is invariable in its effects. This law is, that a certain quantity of air inclosed in a given space, will overcome the force with which a column of water strives to enter the reservoir, and compel the water to confine itself to such limits as are desired, according to the degree of condensation to which the air is subjected.

The submarine boat is wholly constructed of boiler iron, connected by rivets. In shape it is an elongated ellipse, resembling somewhat the form of an egg; in length it is thirty feet, and ten feet in diameter at its greatest transverse section; it has thirty-six tons of displacement, and weighs 20,000 lbs. At its sides are placed thirty orifices—twenty six of these, which are eight inches in diameter, are filled with bull's-eyes, as is the custom in ships, for the purpose of admitting the solar light into the interior. Of the four remaining orifices, two are used as entrances for men into the vessel; and the two others at the bottom of the vessel communicate directly with the soil at the bottom of the waves. These last two orifices, which we will call *hatchways*, are each two feet and a half in length by eighteen or twenty inches in breadth. At the stern of this novel vessel, on its exterior, just above the rudder, is seen a screw propeller, about three feet in diameter, which is sufficient to propel the vessel without difficulty. Both the propeller and the rudder have shafts communicating with the interior, passing through *stuffing boxes*. The men in the interior of the vessel can thus guide its motions with facility.

On the sides, and at the exterior of the boat, are placed, upon hinges, two safety ballast supporters, and suspended by strong chains.

These safety ballast supporters, which are constructed of wrought iron, resemble in shape a gridiron, and their object is to carry, when desired, a quantity of stone ballast of no value, which loads or lightens the vessels at pleasure in its ascending or descending movements. The movements of these safety ballast supporters are also governed by apparatus in the interior of the vessel. A stout iron bolt, which passes through a stuffing box, and which may be moved up or down in it, raises or depresses the safety ballast supporters as is desired.

If we enter the interior of the submarine boat through the *man-hole*, we find ourselves in an apartment which in extent occupies about two-fifths of the vessel; the other three-fifths of its volume being occupied by two large reservoirs, to which are fitted two pairs of pumps, each having two separate functions, either for air or for water.

The object of having two pumps for each of these uses, is to guard against those accidents by which one of them might be rendered unserviceable. This precaution is the more necessary as the pumps are employed in every movement of the submarine boat. Each of these pumps, No. 1 and No. 2, is provided with four cocks, whose use is to produce alternately the expansion and compression of the air, and the expulsion or supply of water in such a manner that they may throw off, or compress, or supply air or water at pleasure, to the reservoirs to which we have already referred; for the whole operation of the submarine boat depends upon the displacement of a certain quantity of condensed air, and in taking in or throwing off a body of water more or less considerable, by working the pumps. Thus, if it is desired to descend to the bottom of the water, the crew, before closing the man-hole by which they entered, will employ themselves in forcing into the reservoir the supply of atmospheric air necessary to balance the weight of the column of water, proportioned to the depth to which it is desired to descend. For the lower it is desired to descend, the more should the air be condensed in the reservoir, so that its resistance may prevent the entrance of the water.

Then, having thus obtained a sufficient supply of air, the man-hole is to be closed, and we proceed to effect the entire submersion of the boat. This operation is in itself very simple. It will be easily understood, when we say that the men who are inclosed in the interior proceed with the water-pumps, to force into the *water chamber*, a sufficient quantity of water to overcome the equilibrium which keeps the boat floating, and to sink it to the bottom of the stream.

Then the boat, by virtue of the law of heavy bodies which only possess the requisite weight to overcome the equilibrium of the pressure and of the specific gravity of water, passes through the liquid at the velocity of one foot a second, and settles gently upon the bottom. After arriving at the bottom, the crew proceed to produce the balance of the atmospheric pressure with the pressure of the water in which they are placed, by means of a small valve which is between the two *hatchways* at the bottom, and of another valve which is placed behind the pumps, the last of which communicates with the air-chamber.

Let us suppose the valve No. 6 alone to be open ; the pressure of the water of the river will immediately cause a *jet d'eau* in the cabin : but if, to prevent the invasion of this water, the valve 8 be opened at the same time, a portion of the condensed air in the reservoir, rushing into the cabin, will there establish a resisting pressure, capable of overcoming the power of the pressure of the water, and from that moment the water of the river will be excluded by the resistance of the pressure of the atmosphere of the interior, and the equilibrium of pressure and resistance will be permanently established.

The hatchways are then to be opened, and the submarine soil will be exposed to the view and touch of the workmen within, who may anchor upon it, and operate with equal facility, either for mining rocks, or for fishing gold, pearls, &c., &c.

The mode of reascending is also perfectly simple, and as easily understood as that of descending, and may be performed in about the same time ; thus, if it has been necessary, for example to take in the weight of a thousand gallons of water, to sink the boat to the bottom of the stream, it will be only necessary to expel the same weight of water, with the same pumps, which act in a double capacity, to lighten it sufficiently to cause it to rise to the surface ; or, if it is desired to ascend more suddenly, it will be sufficient to work the bolt to which are attached the chains by which the safety ballast supporters are suspended with the external ballast contained on them ; at the same instant, the boat, freed from a weight double that of the water which has retained it at the bottom of the stream, darts to the surface with the speed of ten feet a second.

Purity of the air breathed by the men in the boat.

This fluid, which, by the known effect of breathing, becomes more and more charged with carbonic acid gas, whose deleterious effect upon the lungs is well understood, is purified by means of a pump, which, taking it from the cabin, passes it through a solution of potash, which is kept in a caustic state by means of quicklime, in which it deposits its carbonic acid, and returns to the men only pure oxygen.

The submarine boat can safely descend to navigate, or remain stationary under the water, at the depth of from ten to one hundred feet, with or without a direct or indirect communication with the exterior.

The crew consists of from three to six men, who can remain, without inconvenience, from four to seven hours under water without ascending, or ascend at their pleasure. The air which they breath, is purified by a pump, which absorbs the carbonic acid, and gives out the oxygen in a condition favorable for the lungs.

The pressure of the wholesome air in the cabin, not being above two and one-half atmospheres for one hundred feet of depth, is supportable seven or eight hours without fatigue.

The boat may be conveniently employed to explore the bottoms of rivers, lakes, and harbors, either to examine reefs, or to mine them with a view to their removal. It may also be employed in submarine fisheries for pearls, for examining sunken vessels, mining for gold, &c.

It may also be used very advantageously in laying wire for telegraphs, and in the salvage of sunken vessels. For these operations, it may accomodate a crew of seven men.

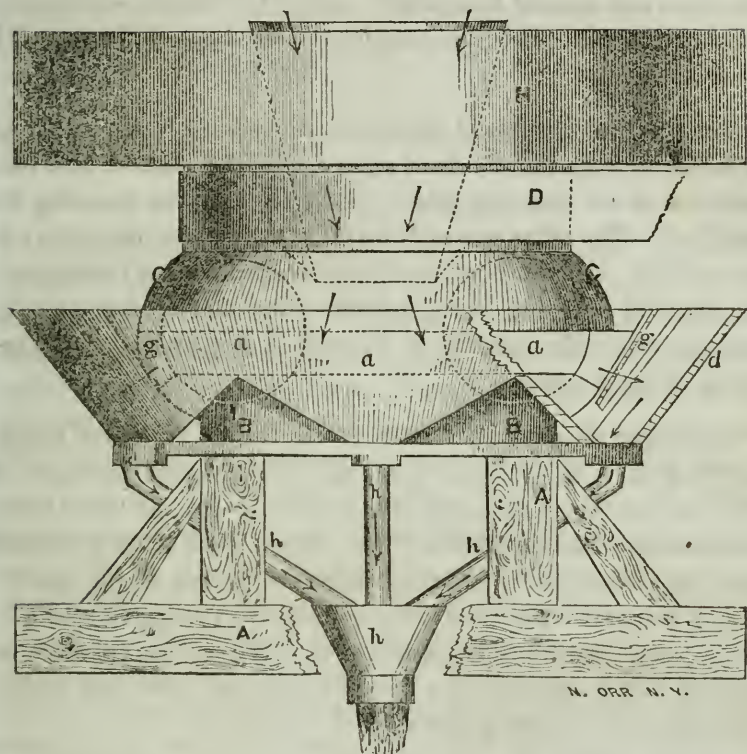
The construction of a Submarine Vessel will cost about 5,700 or 6,000 dollars, and for extraordinary occasions, may be constructed upon a larger scale.

This apparatus may in time be rendered the means of effecting great services to the navy department, for exploring the bottom of ports, inspecting docks, securing dams, inspecting the foundations of bridges, building up submarine constructions, carrying cements and materials to the bottom of basins, looking for breakers, studying the coasts, making submarine maps, ascertaining currents, looking for wrecked persons, &c.

It is intended for gold and commercial marine searching; also for fishing for pearls, mother of pearls, coral, sponges; recovering property in sunken ships, blasting rocks, putting at the bottom of rivers and preserving from any accidents, the wires of magnetic telegraphs, &c., &c.

MACHINERY AT THE LATE FAIR.

Cochran's Quartz-crushing Machine.



EXPLANATION.

A. A.—Foundation frame.

B. B.—Lower plate or disc.

C. C.—Upper disc.

D.—Pully and belt for giving motion to upper plate, and by it to the balls.

H.—Fly wheel.

a. a.—Balls or spheres.

g. g.—Grating screen or bolter.

d. d.—Outside curb to conduct the ground matter, by the outer or conducting pipes to the amalgamator or other receiving apparatus.

h. h.—Pipes.

All the matter to be ground is received through the opening of the fly wheel, and follows the direction of the arrows to the amalgamator or other receivers.

This is a very recent invention of great simplicity, and more effective than any method heretofore in use for the purpose of crushing hard substances. It is the invention of Mr. John W. Cochran, of New-York city.

The machine consists of two saucer-shaped cast iron basins, one of which is permanently fixed upon a solid foundation, and furnished with six cast iron balls, each nearly or quite touching its neighbor. The other saucer is inverted and placed upon the top of the balls; the outer surface of the inverted basin is constructed for carrying a driving band, balance wheel and feeding trough, through which the material to be crushed is conveyed to the interior of the machine.

The upper saucer may be made to revolve at any desired speed, carrying the balls around. It should be mentioned that three of the balls are larger than the others, and placed in the lower basin alternately. The revolution of the upper basin gives a forward axial motion to the larger balls, whilst the motion of the smaller ones is reversed by contact with the larger. The granulated material passes from the peripheries of the balls, through a sieve or grating, and is deposited in a trough outside the basin, and thence descends to the opening below.

It would seem that there is little liability in this machine to get out of order; it presents the appearance of great durability and cheapness in construction, and the granulation of the material, particularly gold bearing quartz, is deemed far preferable to pulverizing with stampers, because, by the latter process, a quantity of the metal is liable to be carried off in leafy particles, coated with iron pyrites.

The machine is adapted to pulverising gold, iron, zinc, copper and lead ores, plaster, flint, coal, pumice, bones, drugs and dye stuffs, copper and iron cinders, marble, cinnabar, barytes, in short every mineral substance, wet or dry, as may be required. At Com. Stockton's mine in Fluvana county, Virginia, it is certified

by Mr. Wm. Bearly, mining engineer, that twenty-four head of the most complete stamps could not reduce to powder more than half the quantity of Cochran's machine in the same time, with the application of equal power. In one of Cochran's machines, driven by a band seven inches wide, at the rate of six hundred feet per minute, 14,160 pounds accurately weighed was perfectly pulverized in one hour and fifty minutes.

A. C.

MOWING AND REAPING MACHINES.

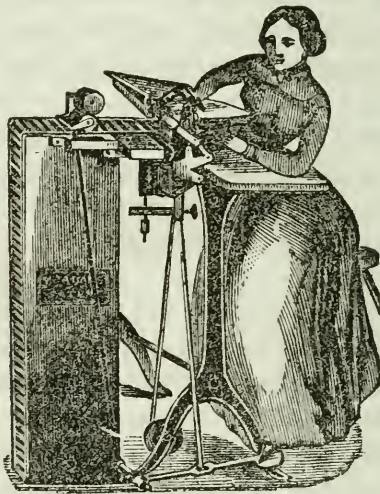
The competitors in this department of agricultural machinery numbered nine. It is to be regretted that the managers could not have had an opportunity of testing practically the merits of these different machines; the lateness of the season, however, rendered such a test impossible. Consequently, the judges to whom they were submitted had very little save an examination of the machines to guide them in coming to any satisfactory conclusion as to their respective merits. The judges say: "The machines submitted to us are of two distinct classes, viz: one for mowing alone, the others combine the operation of mowing and reaping. The machine exhibited by W. F. Ketchum, of Buffalo, for mowing, from our own examination, and from the evidence presented to us, we are of opinion, is a valuable machine. The maker of it has been the pioneer in the introduction of mowing machines, and has spent many years in overcoming obstacles to its success; we recommend to it the highest award of the Institute, as a mowing machine. Of those which combine reaping and mowing, there are six, and one model. They all show a very high order of merit, and some of them have done good service in both kinds of work; one of them is entirely new, and two of them have not been in a condition for us to estimate what they might do. Under these circumstances, your committee have thought they could not give such an opinion of their comparative merits as would be creditable to the Institute or just to the exhibitors, and therefore suggest that this statement be published in lieu of awarding distinctive premiums." We will add here the names of all the exhibitors: W. F. Ketchum, Buffalo, mow-

ing; Mr. McCormick, Chicago, Ill., reaping and mowing; Mr. J. H. Manny, Illinois, reaping and mowing. Mr. T.D. Burrall, Geneva, N. Y., reaping and mowing; Mr. E. F. Forbush, Buffalo, reaping and mowing; Mr. Schnibley, reaping and mowing; Mr. J. Rapalje, reaping and mowing; Mr. H. B. Chaffe, Hartford, Conn., a model.

Mr. J. W. Wright, Chicago, Illinois, reaping, mowing, and raking machine, invented by Atkins. This machine came in too late for competition. The committee, however, in view of the ingenuity displayed in the automaton raker, awarded a silver medal.

A. C.

MACHINE FOR PAGING ACCOUNT BOOKS.

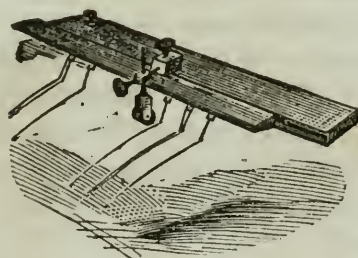


Messrs J. & W. McAdams, Boston, Mass., exhibited two machines for printing the folios in account books, consisting of an endless chain of type running in succession over a flat shaft so as to expose in regular order two pages at a time for printing, which is done by the foot motion, bringing two ingeniously contrived plattens together; at the same time, the reverse of the same motion turns two more pages, and inks both sides with one ink roller. This machine is capable of paging books as fast as the

leaves can be turned over, without the possibility of mistake. The machine reduces at once the difficult labor of paging account



books to a simple mechanical performance, not requiring on the part of the operator even a knowledge of figures. It received a gold medal.



Messrs. McAdams also exhibited an improved method of ruling, by which the process is facilitated, together with specimens of ruling in a great variety of forms, to each of which a silver medal was awarded.

CAST STEEL GEARED ROLLERS.

These rollers are mainly used by silversmiths and jewellers for the purpose of rolling silver or gold into plates of various thick-

nesses. A good pair of rollers is an important apparatus or machine to artisans engaged in these pursuits, to obtain which it has not always been an easy matter.

Messrs. Blake and Johnston, of Waterbury, Mass., exhibited a pair of cast steel geared rollers at our late fair, of very superior workmanship and finish. The cogs instead of being parallel to the shafts, are angular, assuming a spiral form, by which arrangement it is claimed a greater degree of steadiness is obtained. The material leaves the rollers in a perfectly smooth state, whereas, ordinarily it is difficult to avoid a rather uneven and wavy appearance on the surface of the metal. A gold medal was awarded to Messrs. Blake and Johnston.

A. C.

NOTARIAL AND COPYING PRESSES.

Messrs. E. B. Clayton & Sons, New-York city, exhibited a large assortment of presses for the above purposes, composed of all the requisite sizes, which were of very superior workmanship. The construction of the notarial presses is such as to ensure efficiency and celerity of operation, with requisite strength and durability, as well as neatness of form; some of them have adjusted springs, which by means of a quick thread screw, cause the die to rise of itself. In all these presses the bolt and screw are in one piece, with adjusting rods at the side, for guiding the screw, which also ensures steadiness.

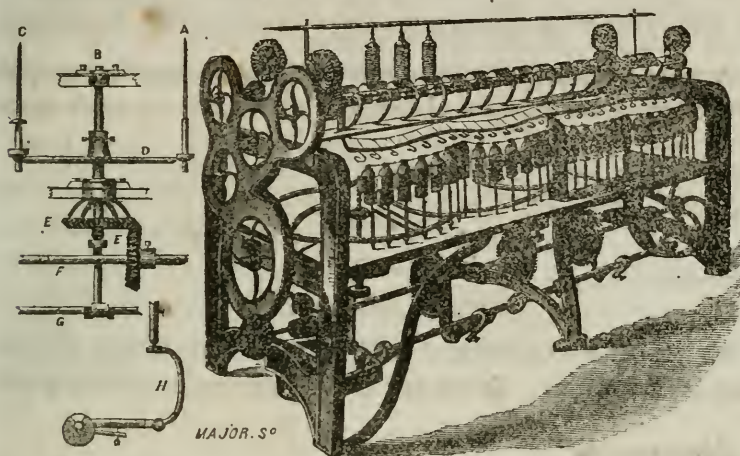
The copying presses are also of an improved construction, by which greater strength is acquired, as well as increased facilities in the process of copying.

A. C.

BRUNDRED'S PATENT THROSTLE.

Messrs. B. Brundred, Son & Co., Oldham works, near Patter-son, New Jersey, exhibited a new spinning frame, of which the following cut is a representation. The distinguishing feature of

this Throstle, is the use of a horizontal friction wheel 2 feet 8 inches diameter, for driving the bobbins, the beveled edge of the bobbin tubes resting on the beveled edge of the friction wheel. By this arrangement, bands for the spindles are dispensed with, and the inconvenience caused by changes of weather from damp to dry are altogether avoided, which is an item of importance.



The principle is here shown on a cup frame, but it is applicable to the several kinds of spinning, such as the ring and traveller, live spindle and flyer, dead spindle with flyer, as used in the largest establishments at Lowell. This Throstle can be built of any desired length, from 10 to 60 feet, and with from 64 to 500 spindles. The length of a frame of 128 spindles, is 18 feet; of 272 spindles, 34 feet 10 inches; increasing or diminishing $22\frac{1}{2}$ inches for every friction wheel of 16 spindles. The traverse is 4 inches, $4\frac{1}{2}$ inches, or 5 inches, according to the nature of the spinning.

The following memorandums of its speed and production have been supplied by parties who have it in operation, viz:

On No. 50 s., 96 revolutions of the front roller per minute.

"	36 s.,	106	"
"	30 s.,	112 to 115	"
"	18 s.,	140 to 150	"
"	12 s.,	150 to 170	"
"	14 s.,	$8\frac{1}{2}$ hanks per spindle in $11\frac{1}{2}$ hours.	
"	30 s.,	$6\frac{1}{2}$	"
"	19 s.,	9	"
		12 hours.	A. C.

WROUGHT IRON PLANING CYLINDER.

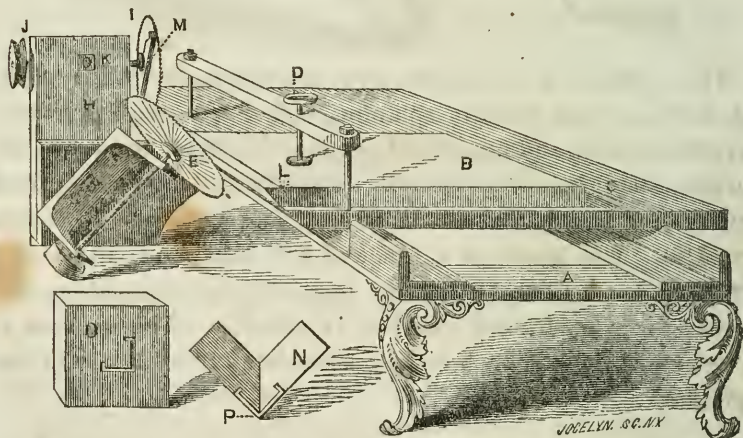
Mr. J. T. Bruen, of Hastings, N. Y., exhibited specimens of machinery of very superior workmanship, among which we would particularly notice a Planing Cylinder, made of wrought iron, and well constructed for the easy and perfect adjustment of the cutting edges or knives. The surface of boards or other stuff planed by this cylinder, as shown to us, was of extraordinary smoothness.

A stone saw, and other implements from the machine shop of Mr. Bruen, gave evidence of the greatest perfection in mechanism.

A. C.

DOVETAILING MACHINE.

Mr. Ari Davis exhibited a machine for accomplishing the purpose of dovetailing. It consists of two saws and a revolving cut-



ter when required, which are thus arranged: One saw accurately cuts the mitre, the other cuts a groove at any required distance from the end of the mitred stuff, on the outside, from top to bottom, into which one edge of a metallic plate is to be inserted. Now, when two ends of the mitred stuff are brought together, forming one corner of the box, the metallic plate, which may be a strip of plate brass bent longitudinally at right angles, with its terminating edges bent inwards, which edges are inserted in the

grooves, and the plate is driven down from top to bottom, forming the outer corner of the box, and permanently embracing both parts. In this case the metallic corner will project its thickness beyond the wooden sides of the box. If it is desirable that it should be flush with the wood, a revolving cutter may be adjusted to the shaft of the groove-cutting saw, and next to it, by which the superfluous wood can be removed, and the plate, when driven on the corner, will be flush with the wooden part of the box.

It is rather a misnomer to call this a Dovetailing Machine, because dovetailing is a manner of fastening boards together by letting one piece into another with tenons, in the form of a dove's tail spread. The machine in question seems rather designed to supercede the labor of dovetailing, in putting the parts together by other means, in a very permanent manner, cheaper and more expeditiously.

A. C.

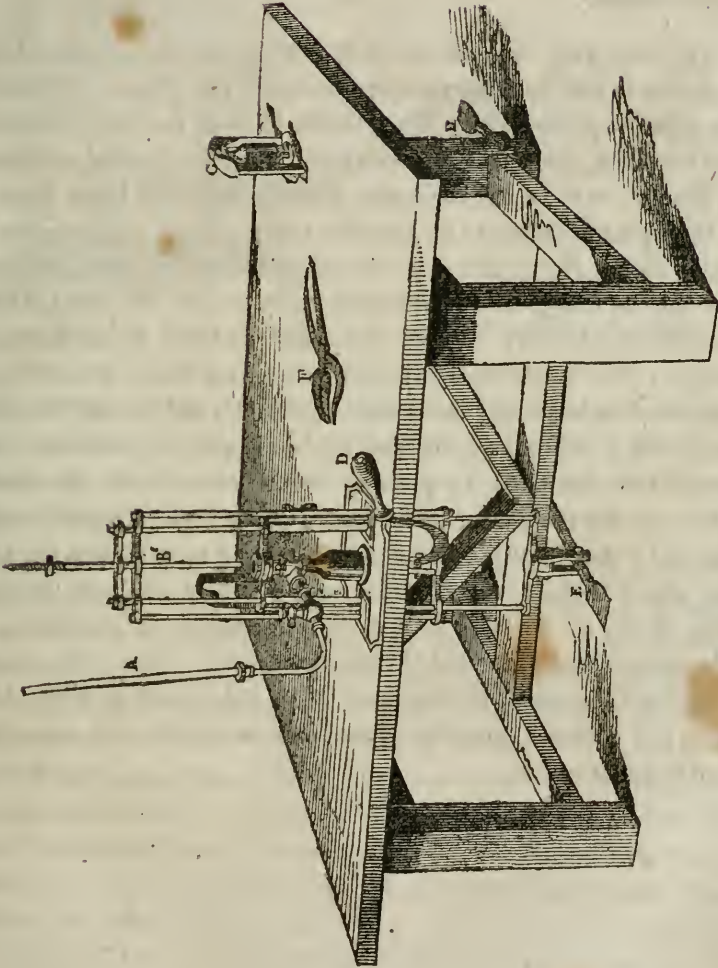
PERRY'S IMPROVED STOP MOTION PAPER CUTTER.

The manufacture of paper of all descriptions, has been very materially improved of late years. By the process now in use, all paper for printing, and much of the papers for writing, are made in one continuous sheet, and it is necessary to cut it into such lengths or sizes as may be desired. This is done by machinery, and some difficulty has arisen from the imperfections in the machines adopted, inasmuch as it was found difficult to cut the sheets square, which is a very important consideration, as relates to printing with the new fast power press, now generally in use.

Mr. Perry's improvement consists in the application of a straight edge across the sheet, at the moment the cutting commences, but does not arrest the descent of the paper from the cylinder. The straight edge is operated by a cam, and nips the paper just above the point of cutting, which is performed in an instant, and the straight edge being released, the paper descends

perpendicularly to the next point for cutting, when the same process is repeated, and the paper is thus divided into sheets, all perfectly square. The improvement is applicable to all cylinder cutters heretofore in use, at a cost of about \$25 each. Mr. Perry's address is 49 Oliver st., N. Y.

A. C.



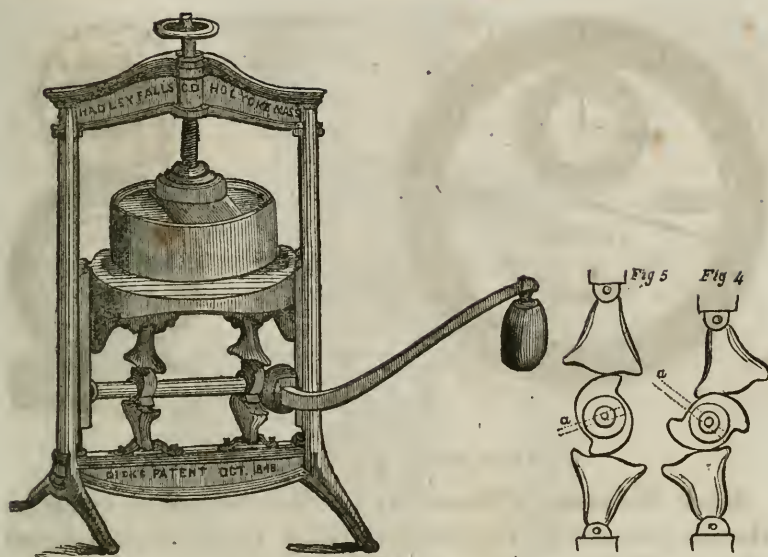
BOTTING MACHINE.

BOTTLING MACHINE.

Mr. William Gee, No. 66 Gold st., N. Y., exhibited, in connection with his soda apparatus, a machine for bottling, as shown in the annexed cut. These machines were excellent specimens of mechanism, and reflect the highest credit upon the skill of the manufacturer.

The soda water is made in a self-acting generator, from which it passes to the bottling machine through the pipe *a*. The bottle must be placed under the cylinder *b*: then the foot, placed on the treadle *e*, must press it down; now raise the lever *d*, as shown in the cut, so as to put the corks into the cylinder *b*, the lever *d* is then pushed down so far that the lower part of the corks are a little above the orifice for the admission of the water, and the one for the escape of air contained in the bottle; the water is now turned on at valve *c*, until the bottle is filled to the required height; the small weight on the end of the lever, should be so regulated as to permit the escape of the air, and permit the bottle to fill; when full, the valve *c* is stopped off, and the cork forced into the bottle by pushing down lever *d* with the hand. The cylinder should now be raised, but the lever *d* remains until seized by the tongs *f*, when it may be raised so as to free the bottle, which is then placed under tyer *g*, where the cork is tied. The stroke of the piston may be lengthened or shortened, at pleasure, screwing around the nut on piston *b*. The corks should have boiling water thrown over them and remain in while bottling; if a small quantity of sweet oil is added, they enter the bottle much easier.

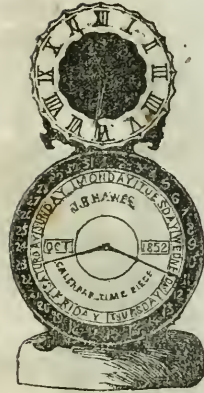
A. C.



D. DICK'S ANTI-FRICTION CHEESE PRESS.

The Hadley Falls Co. Holyoke, Mass., exhibited, at our late fair, a cheese press, constructed on the plan of Dick's anti-friction press, of great novelty, convenience, and apparent durability, for which the Institute awarded its silver medal.

The above cut represents this press so plainly, that a minute description of its parts is unnecessary. It is made entirely of iron, of great strength, occupies but little room, and possesses, apparently, every requisite for a perfect cheese press. Probably, the greatest fault in the cheese made in our country, is the want of thorough pressing, which leaves the cheese damp, with cavities for the easy access of flies, and retaining the elements of putrefaction and decay. Perfect pressing is of the greatest importance in making the best flavored cheese. The manufacturers of cheese are here presented with a press of undoubted power and perfect simplicity. These presses are furnished by the company of various sizes, and warranted to stand certain pressures. A press for \$20, for cheese of 20 to 60 lbs, with five tons pressure; for cheese of 60 to 120 lbs., with eight tons pressure, \$25; for cheese of 200 lbs., with ten to twelve tons pressure, \$30; a screw at the top of the press, regulates the upper platin to the thickness of the cheese, and the pressure is continuous, through the lever and the rolling cam below.



COUNTING HOUSE CALENDER CLOCK.

Mr. J. H. Hawes, of Ithaca, N. Y., exhibited a clock of his invention, designed for the use of counting rooms, banks, railroad offices, public houses, &c., which, if it performs all that is claimed for it, will, undoubtedly, prove a valuable acquisition. The calender exhibits the year, month, day of the month, day of the week, and the time of day, making the proper number of days in each month, including leap year, with unfailing certainty, and requires no changing or winding during the year. It received the gold medal of the Institute.

A. C.

GWYNNE'S CENTRIFUGAL BALANCE PUMP.

The annexed engravings are views of "Gwynne's Centrifugal Balance Pump," patented last year. Figure 1 is a vertical transverse section. Figure 2 is an outside view of figure 1, showing the discharge-pipe, D. Figure 3 is an inside view, showing one disc with its radial arms. Figure 4 is an edge view of the two discs or rotary pistons which constitute the pump when placed inside of the fixed case, figure 2. The same letters refer to like parts.

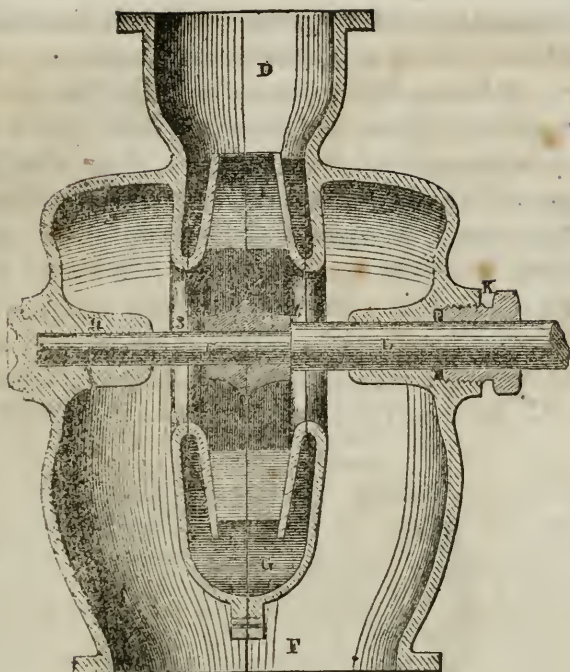


FIGURE 1.

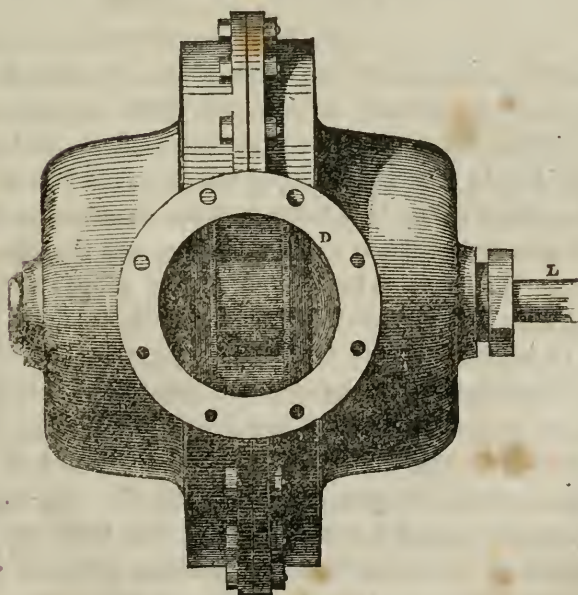


FIGURE 2.

The nature of a centrifugal pump consists in receiving water by an orifice or opening at the centre, and discharging it at the periphery. It has no sliding pistons or rings, like most rotary pumps, but simply consists in having two discs united together by an arm or arms, and placing these on a shaft in an air-tight case, connected with a central suction orifice, and a circumferential discharge pipe. A, figure 4, is the rotary piston, formed of the two discs, which are constructed with radial arms, as shown in figure 3, and which constitute the water passages, through which the water flows from the central inlet openings in radial lines to the circumference, where it is discharged at tangents into the pipe D. The rotary piston is secured on the shaft, C; 3 and

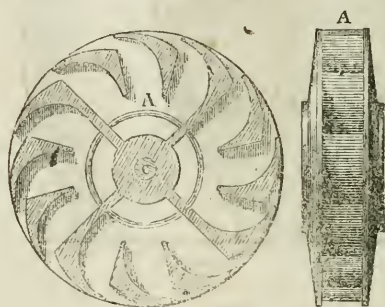


FIGURE 3.

FIGURE 4.

4 are central openings into the inside of the two discs, which are formed like two saucers united, with their concave surfaces placed towards one another; K is a stuffing box, and P is the packing; L is the driving shaft, on which a pulley is secured to drive the rotary piston by a belt; G is the chamber in which the water is gathered previous to its discharge, and F is the base of the case for the pump to be secured to any proper bed, and at the same time it is the suction pipe which leads down into the cistern, or whatever it may be. The water, therefore, enters up through the bottom of the outside case, and passes into the inner case by the central openings, 3 and 4, and into the interior of the rotary piston, the two united discs, and is driven out of the pipe D. H is a bearing for the journal of shaft, C. The engravings exhibit what is termed a drainage pump, one built for the discharge of large volumes of water to distances of from 6 to 20 feet. For great elevations, and fire-engines, a smaller suction and discharge pipe, and smaller issues in the rotary piston are employed.

It must be admitted that the construction of this pump is simple. A rotary piston, when so arranged as to require no packing, and not rubbing with its periphery on a stationary surface, possesses undoubted advantages. We understand these pumps are constructed much cheaper than ordinary pumps claiming the same capacities. Our judges, at the 25th Fair of the American Institute, reported favorably on Gwynne's pump, and recommended it for low lifts. They are manufactured at the works of the Union Power Company, 353 West 24th-street, New-York city.

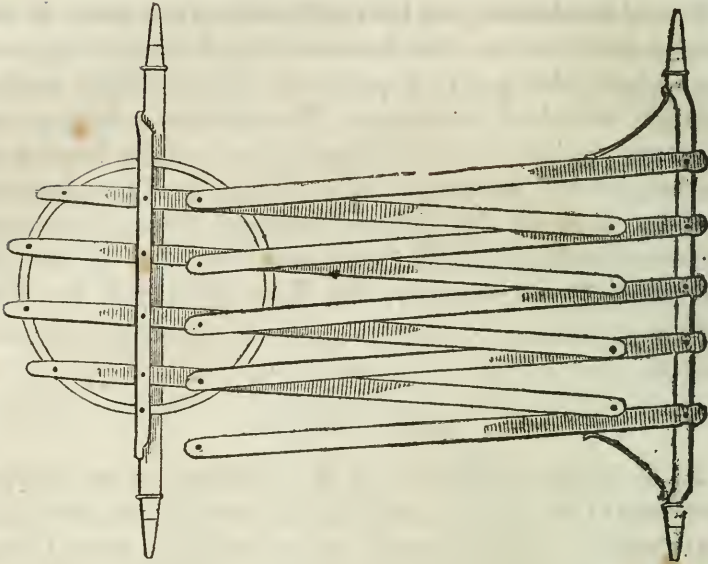
A. C.

AIKEN'S SAW SETS.

Mr. H. Aiken, of Franklin, N. H., exhibited, at our late fair, specimens of his saw-sets, for which he received the award of a silver medal. This instrument, wherever known, seems to have met with very decided approbation, as possessing qualities superior to all others, although there are many in the market, and we have confidence in stating that those from the hands of Mr. Aiken, may be relied on as being made of the best materials and thoroughly tested. Some idea of the importance of such an instrument may be arrived at when we consider that there are over ninety different kinds of saws now in daily use, in the hands of artizans, applied to wood-work; it is probably true that the saw, in some form or other, is more extensively used than any other mechanical implement, and all of them require the constant care and attention of skillful workmen to be kept in order. We copy the following from Mr. Aiken's circular.

"The edges of the teeth at the extreme points in all saws, become worn off by use, and require frequent repairing. This saw-set will bend the teeth in the angle required, condense and refine the steel, bring the points to an edge, and extend the teeth in length, which saves a great portion of the labor usually wasted in filing, and consequently saves the wear of files, which are expensive. The great accuracy with which this saw-set operates, causes the teeth to follow each other in a direct line, which makes the saw cut smooth and greatly reduce the labor or power applied to operate the saw."

A. C.



HUBBARD'S PATENT SELF-ADJUSTING AND SHORT-TURNING CARRIAGE
GEARING.

These are improvements in the construction and application of carriage springs, with gearing so arranged as greatly to lessen the space required in turning. In constructing an ordinary stage coach on this plan, the bottom forms the segment of a circle of 22 feet diameter. There are seven springs running from the front of the body to the rear axle, and six springs, placed alternately between them, passing from the rear end of the body to the bolster on the front axle. The springs are made of wood, $1\frac{1}{2}$ inches wide by $1\frac{3}{4}$ inches deep, and weigh less than fifty pounds. It requires over two tons to bring them down to their bearings, and when brought down they roll together without any striking or concussion, and spring as delicately when carrying but one passenger as when carrying twenty. It is obvious that in this position these springs combine a greater degree of strength than will be required, with little or no liability to get out of order, and as to their durability, we see nothing in the mode of construction or use which is likely to impair it.

The arrangement for short turning is simple, consisting mainly in placing the king bolt a certain distance in rear of the front

axle, which permits the vehicle to be turned in about half the usual space.

The adoption of the wooden springs renders the vehicle lighter and of much cheaper construction. Springs of wood for an omnibus to carry 12 persons, will weigh 75 pounds, against 400 pounds by the ordinary method ; for a carriage with two seats, 20 pounds against 100 pounds. Buggy for two, 12 pounds against 50 pounds, &c.

The cut at the head of this notice represents the springs attached to the rear and front axles, ready to receive the a body of a carriage with two seats.

A. C.

HYDROSTATIC REGULATOR.

Messrs. Sloan & Leggett, corner of Lexington avenue and Thirtieth street, exhibited an apparatus under the above name, designed for regulating the admission of water into steam boilers. It consists of a float placed inside the boiler, which acts through a stem upon projections above the boiler. The projections are regulated to act upon the water cock, and are of different lengths, corresponding to different apertures of the water cock, they are acted upon at each revolution of the machinery, by a cam, so that in case the water changes from its proper level, a longer or shorter projection, as the case requires, is brought in contact with the cam, opening or shutting the valve, thereby increasing or diminishing the quantity of water, according to the power required at the time. In case of a dangerous deficiency of water, the machine is so arranged that an alarm is given.

A. C.

MACHINE FOR CUTTING BOLTS AND NUTS.

A. C. Powell, Syracuse, N. Y., exhibited an improved machine for the above purpose, which met the approbation of the judges. One of the merits of this machine is the greater convenience afforded the operator, enabling him to stand immediately in front of, and near his work.

A. C.

LATHE FOR CONICAL WORK.

Lewis Bollman, 62 Beach street, N. Y., exhibited a lathe for the above purpose, in which the cone is produced by means of guides resting upon the shears and directing the rest; the poppet head remaining always in the center of the shears. A. C.

MANUFACTURES AT THE LATE FAIR.

WOOLEN FABRICS.

In this department, the exhibition was very commendable. The display consisted of broadcloaths, plain and fancy cassimeres, satinetts, silk warp flannel, beaver cloth, hosiery, white flannel, doeskin cassimeres, printed piano and table covers, blankets, silk warp tweed, cashmerets, yarn, &c. On the report of the judges, our committee awarded to the manufacturers of these goods, eleven gold medals, twelve silver medals, and seven diplomas. [See premium list at the end of this volume.]

The doeskin cassimeres, from C. L. Harding, Oxford, Mass., the colored merino cassimeres, from the Mystic Co., Conn., the blankets from the Rochdale Mills, Rochester, N. H., the silk warp tweed, from the Salisbury Manufacturing Co., Salisbury, Mass., were all of very superior quality, reflecting the highest credit on the skill of the manufacturers. There was one case of children's hosiery, from J. J. Hickman, & Co., 53 Cedar street, N. Y. This is a new article at our fair, and very deserving.

A. C.

CARPETING.

Specimens of Velvet Tapestry Carpeting, from the Troy Carpet Mills, Troy, N. Y., George Hastings & Co., agents, an original American design of great beauty.

Tapestry carpeting has become, to a large extent, a substitute for Brussels and Wilton, or Kidderminster carpeting, which was largely imported some ten years ago. The fabric is in appearance

very similar, but by an invention in coloring the worsted, which is altogether new, more beautiful effects are produced, almost rivalling, when properly done, the painter's skill upon canvas.

It is about seven years since it was first imported from England, the only county in Europe yet producing it. Some English workmen attempted the manufacture in this country, at Newark, New Jersey; they did not succeed there. It was then started in the city of New-York, also at Troy, at Roxbury, Mass., and at the Sing Sing prison. The establishment at Roxbury, has been closed about two years, and this branch of industry in the United States, is at the present time confined exclusively to the State of New-York. Power looms have been invented in this country alone, adapted to this fabric; one by Mr. John Johnson, of Troy, another by Mr. Bigelow, of Mass., both are executing the work well. Recently, Mr. Johnson has put in operation looms for velvets, the first invented; the result is most satisfactory. All these looms have been carried to England, and introduced there; the result, we presume, will be shown before long, in the increased importation of the fabric to compete with our own American producers. Since this manufacture became fairly established here, the price has been reduced some twenty-five per cent.

The Troy carpet mills have, for two successive years, received the highest honors of the American Institute, for the superiority of both velvet and Brussels tapestry, and their fabrics have become famous throughout the United States.

A. C.

LINEN AND LINEN THREAD.

Three pieces of table and pillow case linen, made by Mrs. Elizabeth Pearne, 47 Downing street, N. Y. The fabric was of excellent quality, and reflects much credit on the lady by whose hands it was made.

The linen thread from the American Linen Thread Co, Saratoga, excellent in all respects, and pronounced equal to any imported.

A. C.

MANUFACTURED SILK.

John Ryle, Paterson, N. J., exhibited four cases of American sewing silk, equal to any we have ever seen exhibited. In the manufacture of silk, Mr. Ryle constantly employs 314 hands, and consumes from 1,000 to 1,100 lbs. of raw silk per week in the production of sewings, tram and organzine, which are used for covering the wood work of tassels, making gimp, and heading for fringes, and also embroidering silks. Silk of American growth is preferred for many articles. Mr. Ryle imports most of the silk used in his manufactory, direct from China, at a cost of from \$3.75 to \$5.00 per lb., in the gum.

Mr. Joseph Millward, of N. Y. city, exhibited three silk lace shawls, manufactured by him of sewing silk. Of this description of goods, these are the first which have been shown at our Fairs. They were pronounced highly meritorious. A. C.

COTTON FABRICS.

The display in this department comprised bleached sheetings, brown sheetings, printed lawns, silesias, cotton duck, madder prints, purple prints, pantaloons, stuffs, darning and tidy cotton, colored cottonades, colored thread, printed shirtings, long cloth, hosiery, cotton diaper, U. S. pilot duck, brown drills, corset jeans, gingham, &c. The competition, except in bleached cottons and prints, was somewhat limited. In reference to the whole display, we shall avail ourselves of the report of the judges, and make such extracts as may interest the enquirer. In deciding upon bleached cottons, they say: "We found it difficult, and a most unpleasant duty. The contending parties were the manufacturers of the Wamsutta, Williamsville, York Mills, White Rock, and Marshalls. They all deserve high commendations for fineness, durability, and perfect fabric. We have never seen any imported goods, which, in our opinion, would compare with any of the above-named styles for durability,

The prints on exhibition from Sprague's American Print Works, Philip Allen & Sons, and Richmonds, were all well executed, and in good taste.

Printed lawns from the Lodi works, were most exquisitely done, beautiful and tasty styles and patterns, they would bear comparison with the French imported, and creditable to any country.

The Wamsutta bleached sheetings are the finest and most perfect goods exhibited. We think them superb, and believe they are excelled by no country.

The madder prints, from A. N. W. Sprague, Providence, R. I., are decidedly the most perfect printing and best styles of patterns, creditable to the designer, manufacturer, and our country.

The pantaloons stuffs from the York Mills, are unequalled in the United States, and deserve the highest commendation. The sheetings and twilled jeans from the same establishment, we believe are not excelled for durability. The manufacturers have never allowed these goods to depreciate in quality; they deserve the greatest encouragement and praise.

The colored cottonades from the Ida mills, Troy, N. Y., will compare with any imported.

The prints from Philip Allen & Sons, Providence, R. I., are unequalled by any before exhibited, and merit the highest commendation.

Brown sheetings from J. J. Thilton, R. I., and those from the Steam Cotton Manufacturing Company, R. I., were decidedly superior. The brown sheetings and drills from Granitsville, South Carolina, were deemed highly creditable.

The purple prints from the Globe Co., Fall River, were a good imitation of Hogle's.

Bleached shirting from the Williamsville Co., R. I., are superior in fabric, and will compare well in fineness with any.

A case of darning and tidy cotton, from N. G. B. Dexter, Pawtucket, R. I., was pronounced a superb article, the color most

perfect and durable, and can be relied on as permanently fixed, an important matter in dyeing cotton.

Lancaster gingham, from Lancaster, Mass.; these goods, for color, pattern, and durability, have become celebrated, and are in general use. They deserve all the commendation bestowed upon them.

A. C.

SHIRTS.

Of this description of goods, eight cases were entered for competition. The work was uniformly good, some very elaborately wrought, and of well chosen materials. Our committee, on the report of judges, awarded the first premium to Mrs. R. Van Houten, No. 83 Nassau-street.

A. C.

READY MADE CLOTHING.

The display of seamless garments exhibited a greater variety, and of better fabric, than heretofore shown. This branch of manufacture seems to be progressively improving, and gives promise of its future importance; we hope it may result in providing clothes for the million, of great durability, warmth and cheapness. The articles are made of various kinds of wool; by a process of felting, they may be made of any form, size or thickness. A mixture of wool and fur produces a very soft and flexible article, as pleasant to the wearer as any of the textile fabrics. The display consisted of coats, vests, pantaloons, gloves, mittens, &c., made of Saxony and common wool, and wool and fur mixed. They were from the manufactories of S. M. Perkins and L. W. Badger, Auburn, N. Y., J. M. Perkins, Factoryville, N. Y., J. Barber, Auburn, N. Y., and S. W. & H. M. Badger, Elmira, N. Y.

Messrs. Ellis & Isleton, from 439 Broadway, N. York, exhibited a large case of very superior made children's clothing, for which they merit the highest commendation.

Messrs. P. L. Rogers & Co., corner of Fulton and Nassau-streets, N. York, exhibited boys' clothing in a great variety of styles, and of excellent workmanship.

Three cases of ready made clothing exhibited by the "Mariner's Family Industrial Society," were pronounced very creditable. This society is composed of the widows and families of seamen, who are occupied in making all kinds of clothing. The organization of the society, we understand, is such that all the net profits are divided pro rata among its members. It is an excellent institution, and worthy of patronage.

Five vests, made by W. T. Jennings & Co., Broadway, N. Y., of American manufactured silk vestings, attracted attention. The stuff was from the Newport Silk Manufacturing company, Newport, Kentucky.

A. C.

CLOAKS AND MANTILLAS.

The display in this department was very superior, and we are glad to be able to say so, because it introduces to our own country women a new vocation, for which they undoubtedly possess as much taste and ingenuity as the women of any country; gives respectable employment to many who find themselves compelled to put their ability in requisition to obtain a livelihood, and affords to those who are able, the luxury of parting with their superfluous means in cherishing the industry and talents of the less fortunate of their sex around them. The exhibition consisted of velvet, satin and cloth cloaks and mantillas.

A white satin embroidered cloak, from George Brodie, 66 Canal-street, received the first premium on the recommendation of our judges. The chain stitching on white satin is very difficult, but it is reported to have been, in this instance, most perfectly done.

An embroidered maroon velvet cloak, from Molyneux Bell, 58 Canal-street, was reported excellent, and deserving much praise; the design of the embroidery was elaborate and well executed. The first premium was awarded to it on the report of the judges.

A. C.

LADIES' BOOTS AND SHOES.

The exhibition consisted of six cases from different manufacturers, all very creditable, surpassing any imported. One case of white satin fair-stitched gaiters, and one case of ladies' fancy boots and slippers, from Benjamin Shaw, 73 Canal street, were returned by the judges as very superior, for which a gold medal was awarded. N. Cantrell, 336 Bowery, exhibited a case of imitation French shoes and boots, very superior.

Our committee, on the representation of the judges, awarded the gold medal of the Institute to George Nicholls, a journeyman, for the very superior workmanship displayed by him on white satin gaiter boots.

A. C.

MEN'S BOOTS AND SHOES.

The immense capital and product of the labor employed annually in this branch of manufactures, is almost incredible. In the absence of any official statistical returns, we are compelled to seek for information from those most conversant with the trade. The information which we have been in quest of not being complete, we shall defer making any statement at the present time, in hopes of being able to illustrate the subject more fully in a subsequent part of this volume.

At our late exhibition the display was below that of other years; the trade did not by any means come out in its best manner. John Ready, No. 127 Nassau street, exhibited the best patent leather and calf-skin dress boots.

A. C.

LEATHER.

We stand in an independent position in relation to this article of prime necessity, the demand for which seems to be constantly increasing. Our statistics furnish us with no data upon which to found a satisfactory estimate of its annual consumption or value; nevertheless, we know that it is immense, and it is gratifying also

to know that the great bulk of the supply is produced by our own people, at prices which set foreign competition at defiance. In 1851 the importation of leather in a manufactured and unmanufactured state amounted to \$2,815,669 in value, of which sum \$1,314,706 was for men's, women's and children's gloves, the balance was made up by the importation of articles of fancy rather than necessity. The trade in the United States gives employment to an immense number of hands, and we believe the manufacturers are improving in the production of the finer and fancy descriptions of leather.

At our late Fair there was fifteen exhibitors from various departments of this manufacture. The competition was not very spirited, though the exhibition was satisfactory, consisting of oak and hemlock-tanned sole leather, black Morocco, calf-skins, colored and bronze Morocco, black and russet bridle leather, bark-tanned skivers, &c. The calf-skins from M. Crawford, Philadelphia, were reported superior, and received the gold medal. David Moffat, 5 Jacob street, exhibited the best black and russet bridle leather. The Waterbury Leather Manufacturing Co. exhibited the best colored and bronze Morocco and calf skins for suspenders.

A. C.

STRAW HATS AND BONNETS.

Specimens in this department of manufacture from five exhibitors were shown at the Fair. We did not notice any advance beyond former exhibitions. The fine split straw bonnets and fancy bonnets from D. Thayer, Jr., Franklin, Mass., were reported as of superior workmanship, for which a silver medal was awarded.

A. C.

HATS, CAPS AND FURS.

The display in this department consisted of men's moleskin hats, ladies' silk riding hats, ladies' soft pearl hats, misses and children's Angola and fancy hats; navy, army and fancy caps; Russian and Hudson Bay sable muffs and victorines, and other

furs. The exhibition sustained the character of the American manufacturer. The awards were made to John N. Genin, for the best moleskin hats; F. H. Amidon, for the best riding hats for ladies; A. Freeman for the best soft pearl hat; John N. Genin, for the best Angola hats for misses and children, and for the best army, navy and fancy caps; Francis Landry, for the best Russian sable muffs and victorines; J. N. Genin, for the best Hudson Bay sable victorines and muffs.

A. C.

TELESCOPES.

Mr. Henry Fitz, of the city of New-York, exhibited at our last fair, an achromatic telescope, manufactured by himself, for John Campbell, Esq., of this city. The object glass is eight inches, the focal length, ten and a half feet, with circles of right ascension and declination, seven inches diameter. One peculiar feature in this instrument, is the plan of its mounting. The equatorial machinery is of cast iron; the polar axis and declination box being cast in one piece, as is also the saddle for the tube and the declination axis; both axes are cast hollow, which gives great firmness with little weight. Its cheapness is a very great recommendation. It is furnished with clock work for keeping the object in the field of view adapted to lunar, mean, and siderial time.

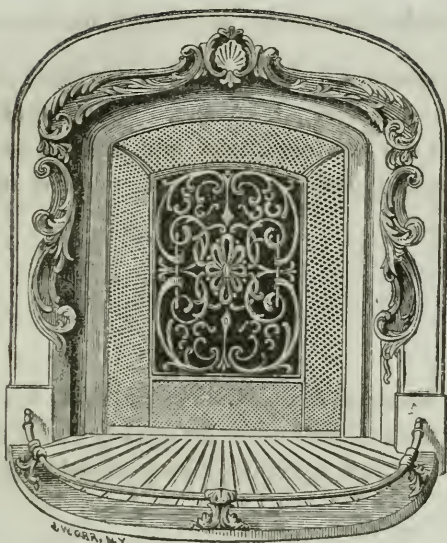
A novel and most important improvement has been made, by which the necessity of clamping or unclamping the tangent screw (which connects the clock with the right ascension circle) is dispensed with, and by which means the management of the instrument is rendered perfectly simple and plain to persons unaccustomed to the use of telescopes, with very little liability to be put out of order, even in unpractised hands. For these improvements, Mr. Fitz has applied for Letters Patent.

This telescope is placed in an observatory on the top of Mr. Campbell's dwelling house, in Sixteenth street, and stands 70 feet above the surface of the ground. The observatory is of a circu-

lar form, with a revolving dome of 12 feet diameter, which is moved at pleasure by a crank with rack and pinion. The hemispherical top of the dome, moves upon an iron ring 12 feet diameter, cast in one piece, and turned in a lathe on the upper side, upon which the grooved wheels run. The observing chair with the observer, are carried round with the dome, which is another new feature in this domestic observatory, and it is found to answer admirably. The building is of brick, with an under cellar ten feet below the surface of the ground. The instrument is placed upon a pier of brick encased in iron, three feet in diameter, which stands on three beams built into the walls of the house, about three inches below the floor of the observatory. The great steadiness obtained by this arrangement, is a matter of surprise to practical astronomers, and contrary to their predictions.

The opening in the dome gives a view from the horizon to the zenith, and is closed or opened by rack work, with a crank, always at the command of the observer, without leaving his seat.

A. C.



GRATES AND FENDERS.

The above cut represents a parlor grate from the factory of Messrs. W. & N. Jackson & Sons, 238 Front street, New-York. These gentlemen are entitled to the highest praise for their skill and perseverance in this department of manufacture. The articles shown by them at our late fair, are unsurpassed by any thing of the kind, imported or otherwise, that we have seen. Our judges, in their report, make the following statement: .

"Previous to 1840, parlor grates were manufactured of sheet iron, on which zinc ornaments were riveted. About that period Mr. Bacheler imported a number of Berlin grates, which gave promise of superseding those made of sheet iron. Mr. Jackson, unwilling to be outdone, resolved to try the experiment of making cast iron grates, himself. He commenced with very costly patterns, and has continued to improve from that day to this; his success has been most triumphant; Berlin grates are no longer imported, and the credit of perfecting this branch of manufactures in the United States, is emphatically due to Mr. Jackson. Those on exhibition are equal, if not superior, to the finest European grates."

A. C.

PARIS FURNACE COMPANY, CLAYVILLE, ONEIDA CO., N. Y.

The very superior display from this company at our last fair, merits particular notice. It consisted of scythes, hay-knives and forks, made of the best materials, and a finish so extraordinary that they attracted attention and commendation during the entire exhibition.

A. C.

EDGE TOOLS.

Messrs. D. Simmons & Co., Cohoes Falls, N. Y., exhibited two cases of edge tools of very superior quality in all respects. And we may add, that this company may safely challenge the world to excel them.

A. C.

GRASS AND GRAIN SCYTHES.

The scythes from Mr. S. Harris, Pine Plains, Dutchess county, N. Y., were reported by our judges to be of excellent quality, and fully sustain the reputation of this long established manufacturer.

A. C.

Remarks.—We feel an assurance in saying, that should our customers from the West Indies and various parts of South America, in quest of tools and implements in the markets of the United States, be careful to make their selections from the authorised agents of such establishments as we have named in the three foregoing notices, and many may be added to the list, the complaints we have heard as having been made in South America, of the worthlessness of American manufactured articles, will soon cease. The probability is, that these orders, to a large extent, are filled with articles of foreign manufacture, which, like Pindar's razors, are made 'to sell,' and that thus the reputation of our own excellent manufacturers and artizans is made to suffer. We find, on examination of the list of imported articles made of steel, iron, brass, &c., that nearly \$7,000,000 in value were imported in 1851, of the very articles made by our own citizens, in a style that cannot be

excelled in Europe, many of them have not yet been equalled, and they are constantly in the market at prices competing fairly with the foreign product. It is a mystery to us what becomes of the importation, since our own people know their respective merits very generally, and reject the foreign product for their own use; at the same time, our tables of exports of foreign manufactures, show that only \$78,000 in value, of this large importation, was exported. What becomes of it? Can it be possible that it went abroad again under the title of American manufactured ware?

A. C.

SILVER GILT MOULDINGS.

Messrs. Black & Gramm, corner of Grand and Centre-streets, N. Y., exhibited specimens of mouldings manufactured by them for picture frames, looking-glasses, &c. These mouldings are first silvered and then covered with a lac prepared for the purpose, which gives them the color and appearance of gold. The specimens were very fine, and can be washed with water without impairing their brilliancy. The silver medal of the Institute was awarded to them.

A. C.

BLANK BOOK BINDING.

Mr. C. S. Boynton, of the city of New-York, exhibited a specimen of Blank Book Binding and Ruling, of novel appearance and superior workmanship. It consisted of an imperial leger of 1,000 pages; each page had a ruled border of twelve lines, composed of five different colors of ink, with circular corners. The ruling was done on each page separately, by means of ruling pens so arranged that the page is completed at one operation, with the lines so perfectly joined as to leave no perceptible break; the whole appearance of the ruled work was extremely accurate and beautiful. The time consumed in bordering these 1,000 pages was thirty hours. This production very distinctly marks the progress of improvement in this department of mechanism, as we can remember that about the commencement of the present century, the time consumed by the best workmen of

that day in faint lining a book of this size, would be nearly six months, independent of the time required for cross ruling. The work reflects much credit upon Mr. Boynton, to whom the Institute awarded its gold medal.

Specimens of binding from Messrs. Bowne & Co., N. Y., and from Messrs. Collins, Bowne & Co., were of an excellent character and highly creditable.

A. C.

STEREOTYPE PLATES MADE FROM GUTTA PERCHA.

Specimens of Stereotype Plates, made of gutta percha, were a short time since presented at the rooms of the Institute, with moulds taken from the type in the same material. These plates, as far as the type was concerned, were as perfect as any metal plates we have ever examined, and even more so. This new art is progressing in the hands of ingenious men, and there is a reasonable probability of its eventual success. The result will be to lessen the cost of type used, by lessening very materially the quantity; one set of moulds made from moveable type, will produce any number of sets of plates, and if applied to printing newspapers, the saving in the expense of the moveable type will be large.

A. C.

GLOBES.

Mr. Charles Copley, of Brooklyn, L. I., presented at the Fair, specimens of Globes of his own manufacture, of very superior quality, constructed from surveys up to the present time, embracing all the new discoveries in all parts of the world.

The celestial globe has been drawn upon the most scientific principles, every star being laid down in its true position. Mr.

Copley has been engaged nearly forty years in hydrographical and geographical works, and we are of opinion these globes are



equal to any that can be procured. Our committee awarded to Mr. Copley the gold medal of the Institute. A. C.

CARRIAGES, SLEICHS, AXLES, &c.

The manufacture of carriages, axles and harness, of all descriptions, are branches of art vastly more important than they are generally considered to be. If we contemplate the losses, delays, injuries, vexations, risk, and sometimes loss of valuable lives, dependant upon the skill, carefulness, and integrity of artisans engaged in these pursuits, we may realize something of the importance of their calling, and the propriety of regarding them, in relation to our daily wants, comfort, and safety, as occupying a

position differing very materially from that of artisans in a multitude of other vocations. The Institute will always consider it an important duty to examine their contributions with particular care, and bestow its awards only on the recommendation of practical and competent judges.

By a new arrangement in the interior of Cattle Garden, the managers were enabled to afford a better opportunity for a display of articles in this department, than heretofore. The display was good, and the competition somewhat spirited. Among the production of twenty exhibitors, there appeared specimens of very superior workmanship. We shall refer particularly to some of the articles and manufacturers.

A top-wagon, from J. C. Wolfe, Newark, N. J., was reported as the best. Smith & Sons, East Brooklyn, L. I., exhibited the best wagon without top. L. N. Herman & Co., Kingston, N. Y., the best sleigh. Alfred E. Smith, N. Y. city, the best steel converted patent axles. C. A. Ball, N. Y. city, the best pair of detached harness shafts. Arnold Stivers, Newark, N. J., the best carriage mountings. M. G. Hubbard, Rochester, N. Y., exhibited a new self-adjusting, short turning carriage, springs and gearing, which we shall particularly notice in a separate article. A. C.

SADDLERY, HARNESS AND WHIPS.

An excellent specimen of workmanship was exhibited by Joseph Hawley, Newark, N. Y., consisting of covered harness furniture, superbly done.

A very superior case of whips, from C. P. Caldwell, Philadelphia, attracted much attention.

With the above exception, the display in this department was unusually small. A. C.

THE MELO-PEAN.

Messrs. H. B. Horton & Co. of Akron, Summit co., Ohio, exhibited a key-board instrument of their invention, under the above name, designed for the parlor. It is smaller than the piano, but resembles it very much in shape. It is a wind, metal-tongued instrument, constructed upon novel principles, aiming at a combination within itself of the qualities of the organ, piano and violin. Its tones are far from being unpleasant, many pronounced them sweet, and as an accompaniment to the human voice, it may become popular. It varies in compass from five to five and two-thirds octaves, and the inventors claimed that, "the combination of its improved reeds and sounding board, with its peculiarly simple and easy blowing apparatus, gives it the power to produce the prolonged sound of the organ, the quickness and brilliancy of the piano, and the variety and expression of the violin."

Success to Akron, which sixty years ago, was the center of a howling wilderness. It now sends forth instruments of sweet and harmonious sounds, in new and beautiful combinations, from the hands of accomplished workmen. It may yet rival the almost time-forgotten cities of the old world, as it certainly marks the rapid progress of civilization and refinement in the new. A. C.

STILLMAN'S IMPROVED HARPOON, DESIGNED FOR WHALING PURPOSES.

The instrument consists of two parts; a lance, with a shaft *a*, of the ordinary length, or longer if desirable; and a strong socket *b*, about a foot or more in length, which is made to slide freely on the shaft, and fit closely to the head of the lance, in which position it forms a prolongation of the head. The flukes are fitted into slots in the socket, close to its junction with the head of the lance; they are movable on pivots, and when shut, as in Fig. 2, and as they are designed to be when the harpoon is to be thrown, they lock into the shaft, and hold the socket firm; but when they are spread, as in Fig 1, the lance is free to slide through the socket. A small line passes through the end of the shaft at *c*, and,

passing on both sides parallel to the shaft, each end is rove through a dead-eye on corresponding sides of the socket at *d d*; they are then made fast to the whale line, which is supposed to be equal to their united strength. This line is then made fast to a short light pole by a becket upon it. This pole is for convenience in throwing, and to take up the slack of the line already referred to. When this harpoon is thrown into the body of the whale deep enough to hold, and traction is made upon the line, the flukes will spread, preventing them from being withdrawn; and, liberating the shaft in the socket, the head is forced inward. The line being then slack, the pole immediately unships, and all force on the lance shaft in a lateral direction is prevented, and all traction subsequently applied on the line is spent indirectly upon the outer extremity of the shaft, until it is entirely buried in the body of the whale. Should the lance be arrested by bone, it may be broken or bent; in either case, the essential parts of the harpoon, the socket and flukes attached, are more reliable in their hold than the common harpoon; *that* is bent as soon as traction begins on the line, and is liable to be wrenched out by the gyrations of the animal; while in this instrument the socket is not longer than is necessary to enter past the blubber, and being of a hollow cylindrical form, it cannot well be bent, nor is there any purchase to wrench it out. It is claimed that this instrument can be used with as great facility as any instrument now in use, and that the lance must inflict such serious injury upon the whale by the loss of blood, as to shorten the conflict and increase the number of captives. If the instrument is entered anywhere near the "life" of the whale, it seems impossible that it should not dispatch the animal at once, unless it should conclude to surrender without attempting suicide by flight.

ZINC PAINT.

Specimens of zinc paint, white and red, with zinc in a metallic form, were exhibited by the New-Jersey zinc company, at our fair in 1850, for which the Institute awarded its gold medal. In 1851 this company offered, through the American Institute, very liberal special premiums for the best specimens of zinc painting, to be exhibited at the then approaching fair, which brought forward a number of competitors with specimens of great beauty, and in all probability had no small influence in extending the use of zinc as a paint, in the place of white lead. We are gratified to learn that the use of these paints is rapidly increasing, and that experience has already established important facts in regard to them, from which the public will undoubtedly derive lasting benefit. That the use of white lead as a paint for the interior of our dwellings is unwholesome and injurious, does not admit of a doubt; that the use of it by artizans engaged in the business of painting has been attended with fatal consequences, is well known and universally admitted. From recent investigations and experiment in the use of the white oxide of zinc, the following facts seem to have been arrived at, viz:

Zinc, used as a paint, is perfectly harmless.

The first cost of zinc painting is less than lead.

It need not be renewed as often as lead.

It is not readily discolored by exposure to dampness, sulphuretted hydrogen, or other gaseous exhalations.

The red oxide of zinc is prepared for paint by pulverizing the ore and grinding it in oil, and forms an excellent article for outside work, particularly for covering iron, for roofs, &c., and is known as "Brown Metallic Zinc Paint." The white oxide of zinc may be produced by the company through the agency of their improved process for working the ore, at a cost of two to three cents per pound; it is then ground in oil, and is ready for the market.

The New-Jersey Zinc Company deserve the thanks, as well as the patronage, of the citizens, for their perseverance and enterprise, through which they are now enabled to furnish an article

of paint possessing great brilliancy and beauty, entirely free from the objections so long known to exist against the use of white lead. The writer of this feels bound to add his testimony in its favor, by stating that, during the spring of 1852, whilst slowly recovering from a very serious sickness, the whole interior of his domicile was painted with white zinc, parts of it with two coats of most beautiful white, without the slightest inconvenience to him or any member of his family, arising from its exhalations.

A. C.

[WOOL FROM VIRGINIA.]

Mr. H. N. Dox, from Nelson county, Virginia, exhibited two fleeces of wool from a cross of Merino and Saxon. Our judges pronounced it a good specimen of Saxony wool, fine and in good condition. Mr Dox's flock now consists of 700 sheep, and yield an average fleece of $2\frac{1}{2}$ lbs., which now sells at 50 to 60 cents per pound. The cost of keeping in Virginia, is about 50 cents a head per annum. The sheep are kept on green feed all the year with the exception of two months. Mr. D. is of opinion that the quality of his wool improves annually.

A. C.

AMERICAN STATUARY MARBLE.

Mr. Joseph F. Lippitt, exhibited two mantles and a statue specimen of marble from his quarry at Wallingford, Vermont, the quality of which was considered very superior, and equal in many respects to the Italian, from which it is not readily distinguished. We understand it is coming into very acceptable use for mantels, table tops, and plumbers' work. It is furnished at from 25 to 33 per cent. less than the imported marble. There is very little doubt, that as the development of the mineral resources of our country progresses, statuary marbles, of unrivalled beauty and excellence may be found in abundance.

A. C.

MARbled IRON.

Mr. Silas C. Herring, No. 813, Broadway, N. Y., exhibited fifty-two pieces of what is termed marbled iron, as specimens from his manufactory, consisting of mantles, table tops, &c., all of which attracted general attention and admiration. The foundation is iron, cast from elaborately wrought patterns. The surface of these castings, after being prepared, receives a coating, which can be put on in imitation of the most delicate and choicest marble. The imitations are so perfect, that it requires a practised eye to discover the difference. It is then submitted to a very high degree of heat, in furnaces or ovens constructed for that purpose; during the process of heating, the material which forms the coating, vitrifies and unites permanently with the cast iron without marring the delicacy of the lines or figures of the artist, or changing the colors, except to brighten them. After the firing process, the surface is susceptible of the most perfect and enduring polish, which resists the action of acids and other corroding substances so detrimental to marble. The iron, thus finished, we understand, permanently resists the action of moisture and ordinary heat, and is not impaired by exposure to the atmosphere throughout the year.

It will be perceived that it is applicable to almost an endless variety of uses, including external as well as internal decorations and embellishments. We have seen fluted columns of this material ten feet in height, which were, to our eye, beautiful. If this is not a new thing under the sun, it is certainly a combination of great beauty and promising utility, resulting from an union of science and art. It is a most perfect substitute for marble, as far as appearance goes, and may be advantageously used in situations and under circumstances where marble itself would utterly fail.

The process, we understand, is the invention of Messrs. R. F., & J. P. Williams, of Ohio; and the public are indebted, for its early introduction into the market, to Silas C. Herring, Esq., and Mr. John Ruston, of the city of New-York. It received the gold medal of the American Institute at its late fair.

A. C.

GOLD BEARING QUARTZ.

Mr. D. K. Minor exhibited at the fair, a specimen of gold bearing quartz, weighing 113 lbs., which attracted much attention. This specimen was taken from a vein in the mines at Volcanoville, Eldorado co., California, near the middle fork of the American river, and 70 miles above Sacramento city, on the 9th day of May, 1852, by Mr. Nathaniel Conkling, and was brought to New-York the following June, by Mr. Miner. It was estimated to contain over \$2,500, and belongs to the "Volcano Quartz Mining Co.," office No. 78 Broadway.

A. C.

TOMATO FIGS.

Mrs. Sarah Ann Porter, of Mattewan Point, New Jersey, presented at the late Fair an article under the above name, which, in consequence of its novelty, attracted attention. This is a very delicate method of preserving the tomato; and if its supposed medicinal properties are not thereby impaired, will undoubtedly be sought after by those who are in the habit of using them freely. The fruit thus prepared resembles a very delicate fig, and constitutes a species of confectionary which is very acceptable.

The tomato used is the yellow pear-shaped variety, selected on account of their uniform size, better appearance when dried, and the readiness with which the skin leaves the pulp in the process of preparation. The fruit is picked when quite ripe and immersed in boiling water, to release the skin, which then peels readily. One pound of best loaf sugar, pulverized, to one pound of the fruit, is required. The sugar is sprinkled upon the tomatoes without any other addition, both being placed in glass or stone jars, where the mass remains for three days; then the syrup is poured off, and boiled until the scum ceases to rise, when it is poured, boiling hot, on the fruit, and thus it remains two days, when it is poured off and boiled again; the boiling is repeated a third time. Then, after standing two days, the fruit is ready for drying, which is done by exposure to the sun for six or seven days, being carefully turned every day, and the fruit may then be packed for market.

A. C.

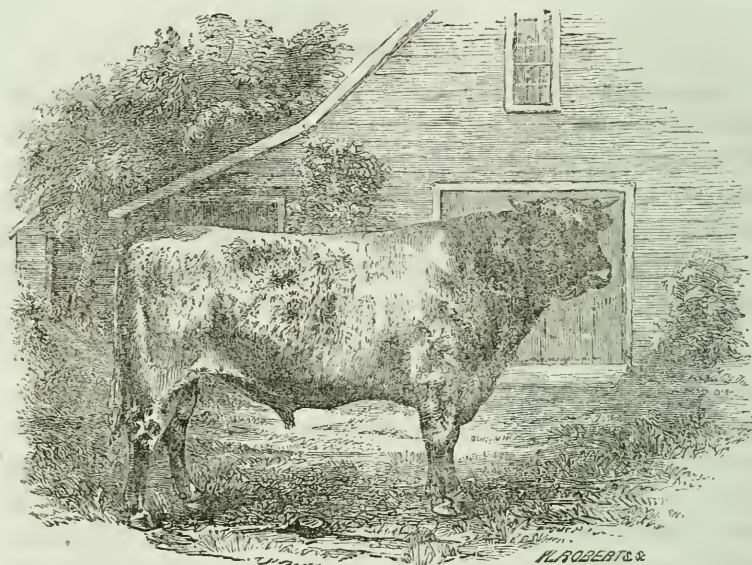
FIRE WORKS.

In accordance with our custom of the last twenty years, the board of managers offered the following premiums for a display of fire works, in competition, viz: For the best display, \$100; for the second best, \$50; for the third best, \$25. Only two competitors entered, Messrs. Joseph G. & I. Edge, and Mr. Isaac Edge, all of Jersey City. The exhibition took place on the evening of the 28th of November, at the close of the Fair.

The display was truly magnificent, brilliant in color and beautiful in design. The principal piece was composed of a central group of colossal figures, representing the genius of America, crowned with a laurel wreath by the Goddess of Wisdom, and receiving from an attendant divinity the scroll of Fame. This group was enclosed in an arch of arabesque work, surmounted with the American eagle, and flanked on each side by an elegant imitation of the fountain of the Infant Triton in the garden of Versailles; presenting in the whole, a front of splendid highly colored fires of ninety feet in length, by over fifty in height.

Another piece worthy of notice, was called the Emblem of Freedom, consisting of a large shield and pendent flags under a semicircle of stars, for the states of the Union, which was surmounted by our national bird. Messrs. Joseph G. and Isaac Edge deserve much praise for efforts continued by them for a series of years to elevate the pyrotechnic art from the mere manufacture of squibs and popping crackers, to the rank of one of the arts of design. The artistic skill shown in their allegorical pieces, it is said, has never been equalled in this country, and probably not in Europe. The first and second premiums were awarded to them by the judges.

A. C.



BACK-WOODSMAN.

Short-horn bull Back-woodsman, winner of the first prize, (\$25) in the class of Short-horn bulls over three years old, at the cattle show of the American Institute, held at Madison Cottage, New-York city, on the 20th, 21st and 22d days of October, 1852. Weight, on the 19th October, 1852, 2,324 lbs.

Pedigree.

Color red roan ; bred by John Walton, Esq., of Peterborough, C. W. ; owned by Samuel T. Taber, of Chestnut Ridge, Dutchess co., N. Y. ; calved 20th April, 1847 ; got by Brilliant. 30 E. H.

Dam, Young Favorite, by Comet ; g. dam, Favorite, by Henwood, (2114) E. H. ; g. g. dam, Sweet Apple, by Frederick, (1060) E. H. ; g. g. g. dam, Ribston Pippin, by Cleveland, (146) E. H. ; g. g. g. g. dam, Golden Pippin, by North Star, (459) E. H. ; g. g. g. g. g. dam, Beauty, by Favorite, (252) E. H.

Comet was got by Reformer, by Worcester ; dam, Favorite, by Warden, (1563) E. H. ; g. dam, Amba, by son of Atlas ; g. g. dam, Actonia, by Duke Humphrey. ; g. g. g. dam —, by Badsworth, (47) E. H. See English Herd Book.

STATEMENT OF MR. JACOB P. GIRAUD, JR., TO THE BOARD OF MANAGERS
OF THE AMERICAN INSTITUTE.

Gentlemen—In conformity with your regulations, circumstances again require that I should allude to my agricultural operations of the past season, the most prominent of which is the cultivation of Indian corn, which is to me a subject of untiring interest, not only in regard to the utility of its production, which is of the first importance, but also of its capability of development in numerous forms and colors, which renders it, in connection with a just appreciation of its high value as a cereal, the most interesting crop we till.

Of the fifty varieties exhibited at your late Fair, the utility of continuing so large a number, will doubtless suggest itself to the minds of some. To those unacquainted with its tillage, I would say that each variety has habits peculiar to itself, in regard to time for ripening, extent of foliage, and ability for producing seed. Thus a variety is held in high estimation at the north, on account of the short period required for ripening, while in a more southern latitude its place is supplied by those of greater value when grown with the great advantage afforded by the longer season of a milder climate. Nor are we by climate only to be governed in selecting seed; the condition of the soil, and our ability for procuring fertilizers in sufficient quantity, should be well considered before selecting a variety suited to our circumstances. For example, the proprietor of land, rich in the requirements for Indian corn, or facilities for making it so, may indulge in the rich and stately growing "Golden Sioux," while he whose soil and opportunities would suffer by comparison, would wisely act by planting a variety of less pretending growth.

At local fairs, especially those representing counties only, we should not, in a strict utilitarian view, expect to meet with so many representatives of this valuable grain. But your institution claims a much wider field; as its title proclaims, it represents, at its industrial exhibitions at least, the United States; where then can be a place more appropriate for exhibiting, in numerous varieties, the product of this accommodating plant, now cultivated throughout the length and breadth of the Union.

The general course of cultivation pursued by me this season was the same as that of previous years, with which you have on a former occasion been made acquainted. On a portion of the land, however, I this year used improved phosphate of lime, with marked good result; and with the view of estimating the comparative merits of specimens of this fertilizer from rival manufactories, I applied it respectively on alternate rows, and observed no superiority of one above the other. The mode of cultivation required for many other plants would perhaps afford a better field for testing their respective merits. That superphosphate of lime is an excellent fertilizer for Indian corn, the results of the analysis fully establishes, but whether it can be profitably employed I am not at present prepared to say.

In employing chemically prepared fertilizers, a strict view in regard to the lasting effect they have upon the soil, should be well considered, as well as in the effect upon the present crop. Barn-yard manure possesses this great advantage of permanency in a high degree, and can be safely used in the cultivation of any crop; but the great difficulty is that few or no farms furnish it in sufficient quantity, and when purchased at a distance, as it usually is, and the expense of cartage is added to the cost, it is one of the most expensive manures used. Wood ashes also contain properties entering freely into most vegetable products, and are well known to be one of the best fertilizers for corn, but cannot always be obtained in sufficient quantity, or at a price that will justify their free use.

Of manures applied locally, guano mixed with charcoal, in the proportion of one part of the former to four of the latter, is perhaps the best and cheapest. I have used it with good results in various departments of the kitchen garden, and have observed its active stimulating effects on corn, especially in the early stage of its growth; indeed, Peruvian guano may be considered a universal fertilizer, and a most valuable auxiliary to agricultural and horticultural efforts. The large quantity now used in England, where agriculture from necessity has been reduced to a science, and the vital importance of renovating and keeping up the condition of the soil is a subject of active discussion, with a rigid

view to profitable expenditure, attests the high appreciation there placed upon this comparatively recent acquisition to the farming interest. Our position, happily, is somewhat different, especially in districts lately opened to Agriculture, where but recently the axe has been laid aside for the plow, and where the generous soil so liberally gives forth its treasure. There we are aware that the subject of manuring is not so important, but in the older districts, superficial farming, in connection with the advanced prices of lands, is found unprofitable; to which we may chiefly trace the intelligent enquiry that has within a few years past been directed towards the improvement of the soil, by furnishing special manures to supply the missing constituents required by the respective crops. With the aid of chemistry, there is scarcely any soil unworthy of cultivation, or which, in my opinion, cannot by judicious treatment be profitably employed, and of which the capabilities and deficiencies cannot be unmistakeably made known. The requirements for Indian corn and all other crops, may, by chemical aid, be supplied to all soils, and the results anticipated with as great a degree of certainty as are the laws which govern the science, which all admit are constant.

Although the seed of Indian corn is the first object to be attained by cultivation, it nevertheless possesses a high value in its capacity of furnishing from its foliage a large quantity of excellent fodder, the value of which, however, greatly depends on the mode of preserving it. If left standing on the field until late in the autumn, most of that portion in which consists its chief value is lost; but if the tops are cut, and the leaves below the ears are stripped off when their extremities are changing from green to yellow, which does not occur until the grain is well glazed, they furnish an excellent substitute for the best of hay. This mode of procedure, we are aware, meets with opposition chiefly on the ground that what is gained in fodder is lost in grain; but having repeatedly practiced both modes with alternate rows, and finding no established difference in the product, either by weight or measure, have adopted the system of topping with the certainty of superior fodder. I entertain the opinion that when the grain is as far advanced, and as well glazed as it is when the extremities of the tops indicate maturity, that the process of filling is accomplished,

and all that is then required is for the grain to harden by exposure of the wind and sun, to ensure safety in storing and transportation. With this view, the theory that the descending sap is taken up by the footstalk of the ear increasing the bulk of the grain, is irreconcilable.

The estimate generally placed upon this portion of the crop, is far below its real value, if we judge from the indifferent care too frequently taken of it; but when nothing but the fibre is left, stacked out without protection, blackened by the weather and dried almost to crumbling, it furnishes but a meagre winter fodder, but when properly preserved, horses as well as horned cattle thrive remarkably well on it, and the careful farmer reaps the advantage of both field and meadow in the tillage of this productive plant.

In the southern states the value of its foliage is more justly appreciated, and we learn that the knights of the turf, when leaving home with their steed, bale up their corn blades and carry them with them, preferring it to hay when preparing for the contest, for both speed and endurance.

In addition to the varieties grown last year, I this season included with others a variety said to be freely grown on the borders of the Black Sea, and imported largely into England from the port of Galatz. It meets with great favor in the European markets, and the prices current inform us, commands the extreme rates. The grain is quite small, roundish, very hard, and well adapted for shipment, but can see no reason why in point of intrinsic value it should be inferior to the finer sorts grown with us. With me it attained only the height of four and a half to five feet, produced near the ground two and three ears, with twelve to sixteen rows from five to seven inches in length, and ripened in twelve weeks. In this, as well as other sections where farmers are accustomed to a more imposing growth, we do not expect it to meet with much favor; but in northern localities it may be desirable on account of the short period required for ripening.

A more valuable variety, however, for general cultivation, is the "Golden Spike," a variety I have originated by hybridation,

this year for the first time shown at your exhibitions. Under fair circumstances it grows seven feet high, the stalk midway furnished usually with two ears, eight-rowed, and ten to thirteen inches in length, faithfully representing in form the distinguishing character of its title. Ripe in fourteen to fifteen weeks.

CATTLE ROOTS.

The mangold wurzel and carrots exhibited in connection with other roots of the above class, were grown on clay loam, furnished with yard manure, and deeply trenched the previous autumn. To the latter circumstance, chiefly, I conceive, is to be attributed their full development and fair appearance, which is only another evidence that for the successful cultivation of all tap-rooted vegetables, the ground should be deeply worked. Spade husbandry, in connection with liquid manures, the system of cultivation in Flanders, as referred to in Coleman's *European Agriculture*, is perhaps the highest practical effort of which the subject of that work treats.

The large landed proprietor will question the expediency of so seemingly an expensive course, but the cultivator of a few acres, especially when near to market, afforded by proximity to large cities, would find it a source of certain profit.

The quantity of vegetables that a few acres under thorough cultivation are capable of producing, is remarkable; but land has been comparatively so cheap, and its inherent fertility so rich, that a careless system of cultivation has too generally prevailed.

A very objectionable feature in connection with our farming interest is the desire for too large possessions, which in feeling is truly American, of course commendable, and we admire it; but it had better be progressive. How frequently do we see attempts at cultivating a hundred or more acres, with help and manure not equal to more than half the extent of land subjected to this superficial process, and when we interrogate in regard to such unthrifty course, the reply universally is want of capital. Then

we say, especially if subject to mortgage, sell enough to furnish funds sufficient to develop the resources of the remainder. In England it is estimated that £8 sterling, or \$40 dollars, cash capital per acre, is necessary to make the land. In other words, farming is a business requiring a knowledge of the laws governing the results, and capital corresponding with the extent of operations, without which it cannot be profitably pursued. As a source of rapid wealth it offers no inducement; but as a means of abundantly and permanently supplying all of the rational enjoyments of life, all whose tastes so incline, and are willing to apply the same amount of industry necessary for success in other business can confidently depend.

One great advantage we claim for it over mercantile pursuits, is that the capital is not endangered by the sudden reversions to which it is constantly exposed when invested in commerce. It is true, there are seasons when the crops, however skilfully managed, ill repay the cost of production; but he is an indifferent farmer that cannot bear up against an occasional season, when the earth withholds a portion of its fullness.

To the leisure-seeking theorist, desirous of changing the active employment of city life for the imaginary spontaneous enjoyments of the country, we say hesitate before purchasing a farm, or too late you may find that though theory is valuable, practice is invaluable, and that both are requisite to attain the distinguished position of a successful and accomplished agriculturist.

Very respectfully.

JACOB P. GIRAUD, JR.

BERGEN, *New-Jersey*, Dec. 6th, 1852.

PROCESS OF MAKING CHEESE, BY JOHN O. DALE, WESTERN, ONEIDA CO., N. Y., TO WHOM THE FIRST PREMIUM OF THE AMERICAN INSTITUTE WAS AWARDED, OCTOBER, 1852.

I milk 30 cows, averaging one year with another, 3 lbs. of cheese per day to a cow. Last year the season being very dry, the average was less, say $2\frac{1}{2}$ lbs. per cow. My cheese-making season is about six month, commencing about the 1st of May. Put the ren-

net into the milk when it is as warm as it comes from the cow ; if the weather is cold, the milk will require heating to about the temperature named above, before putting in the rennet. My mode is to take five rennets and put them into a stone jar, holding about three gallons, and fill the jar with strong brine ; and this I frequently fill up the second time, as the strength will not be exhausted by using the fluid the first time out ; but this, of course, depends upon the strength of the rennet. The rennet from a calf four days old is much better, purer and stronger than one from a calf four weeks old ; and in saving the rennet from a young calf, part of all the contents of the stomach should be saved, mixing with the contents of the stomach half as much pure salt as the stomach contained of curd ; but if the rennet is taken from a calf fit for veal, no portion of the contents of the stomach should be saved. The quantity of rennet used should be such as would coagulate the milk in about thirty minutes, say about a pint and a half to the milk of the above number of cows. If this does not effect the object, increase the quantity a trifle. There will be a difference in the strength of the rennet at different times.

Cut the curd carefully with a wood knife, into squares of about an inch, let it stand until the whey rises above the curd, breaking it up from the bottom of the vat or tub ; then let it stand until the accumulation of whey is sufficient to scald the curd the first, then draw or dip off the whey, strain and heat it to 90° , then turn on your whey, turning and breaking up the curd while doing so ; as soon as it begins to cool, you strain off the whey again, and heat it to 104° or 105° , then pour on your heated whey again, all the while working and breaking up the curd with your hands, until it is entirely fine, letting it remain until it is cooked to that degree that by working the curd in your hands the particles will not be larger than kernels of wheat ; then draw off the whey and salt at the rate of an ordinary sized tea cup full to 15 lbs. curd. After salting, continue to work the curd to the degree of fineness last named ; the curd cannot be too fine ; then put it into the press, and let it stand six hours ; then turn, bandage and press 18 hours more ; then place the cheese on the counter and bandage it, then color cheese and bandage together after the coloring matter strikes in, grease well with whey butter, and never grease any

more, but turn and rub the cheese well every day for four months; after that time turn and rub well about three times a week.

The above is a good general rule, but not invariable. In a very wet time, when the milk contains a larger quantity of water than it does at others, the curd might require a little more salt, and perhaps a little more scalding, and so other variations to which the general rule is applicable.

NEW-YORK, October 28, 1852.

To the Committee on Agriculture of the American Institute:

Gentlemen—As one of your judges on “fat cattle,” I am induced to address you a few lines, not for the purpose of instructing you in the discharge of your various duties, but with a view to assist with what little knowledge I possess, in perfecting the arrangements of the Institute in regard to this part of its annual exhibition. Feeling an interest in the prosperity and usefulness of the institution, I am confident a few suggestions will receive attention if made in the right spirit.

The last exhibition of fat cattle, with a few exceptions, was quite inferior, most of them falling below second rate for prize cattle. Such qualities can be bought almost any market day in the year at the Bull’s Head. I differ with some of the judges with whom I have been associated, both at the Fairs of the Institute and at the State Fairs, who contend that the best and fat. test cattle on the ground should receive the *first prize*. I would not award a first prize to any animal, unless it was found to be superior in size, fatness, and primeness, to animals ordinarily sold in our cattle market. The breed, and constant care and manner of feeding, are essential requisites in producing what should be termed prize fat cattle, for which the award should be, measurably commensurate. A farmer, who may raise a pair of cattle from calves, watch, nurse, and feed them for four or five years, or more, and turn them out, possessing extraordinary fine points, and weighing not less than 2,500 lbs., and authenticated by affidavit, finds little inducement to exhibit them at our fairs

under a rule which puts him on a par with the exhibitor of vastly inferior animals, as far as the testimonials of former or succeeding fairs are or may be indicative of merit. The practice of giving the *first prize* to the best and fattest on the ground, is not sufficiently discriminating, some definite standard should be adopted whereby merit might obtain a fair reward.

In a separate sheet accompanying this, I have taken the liberty of suggesting for your consideration a list of premiums and qualifications for prize cattle, calves, and sheep.

Most respectfully, yours, &c.,

THOS. F. DE VOE,

Butcher, No. 768 Jefferson Market.

CULTURE OF THE GRAPE.

The following letter from Gen. Tallmadge, President of the American Institute, to M. Fleischmann, late U. S. Consul at Stuttgard, Wurtemberg, gives an interesting account of a very valuable work which he has just completed :

NEW-YORK, *Monday, May 24, 1852.*

MY DEAR SIR:—I am greatly obliged by your kindness in submitting to my inspection your work in five volumes, large folio, of specimens of the grape vine and its treatment, and one on the melon. It is a gratifying circumstance, that after a three years absence you are enabled to return to the welcome of friends; and in addition to the character of fidelity in office, and improvement in the higher pursuits of literature, you are enabled to present six such manuscript volumes. It shows your leisure time from other duties has been spent in industrious pursuits; if not useful to yourself, at least honorable to the country of your adoption. That country may well make it an occasion for some material demonstration to its author.

The kindness of the king of Wurtemberg in allowing you free access, has enabled you to make your drawings, not only from his library and gardens, but from Nature. The volumes of your work

show you have successfully availed yourself of these opportunities, in the drafts and in the coloring of the specimens preserved. The stem, with the vine, the tendril, and the cluster of grapes; and the cutting; to engraft or to propagate, are the two figures of each variety, on each folio page of the book. They are executed with such precision of draft, and accuracy of coloring, as to enable the eye to determine many of the varieties, without a reference to their names. It shows your ability with the pencil and the brush, and gives material value to the volume.

You seem to have copied your specimens very much as probably you found them, in the garden of the king of Wurtemberg. The wine countries plant the vine without classification, as being suited in their varieties, for the table grape or the wine press. Climate compels England and ourselves here, to regard these distinctions. She cannot cultivate the wine grape in the open air at home, and we cannot cultivate it, certainly, north of the Potomac. The books afford abundant information and instruction in regard to the selection and the cultivation of the wine grape. That selection regards only the varieties to produce the different kinds of wine. Your volumes present these varieties, with many interesting and useful specimens for that object. The southern and western portions of this country have a soil and climate peculiarly congenial to the mulberry and the vine. The grape cannot endure any frost on its spring blossoms or ripening fruit.

England can only raise the table grapes of Europe with the aid of her hot houses. It was the same case with ourselves. She has made her selections for this purpose from the vineyards of Europe;—especially regarding size of cluster, flavor of grape, and delicacy of fruit. We, in this country, have made our selections very much from England, and with some additions. We have the large Syrian grape, so beautifully copied in your book. The large Smyrna grape, also, so well exhibited in your book, remains to be obtained. Spain and Portugal have each imposing specimens of the table grape. But the large inviting grape is often tough, coarse, and without flavor. Whatever England has so long rejected in her selections we must adopt with care.

Experiments to naturalise the foreign grape in about 38 to 42 degrees of north latitude, have ascertained that our summers cannot be relied upon as exempt from frost, beyond June, July and August. Frost oftentimes comes in the last of May and early in September. But say we have a summer, at most of three and a half months, without frost. Experience has established that the foreign vine requires a season of from four to five and a half months to ripen its fruit into its luscious and natural flavor and sweetness. Upon such facts, all hope to naturalise the foreign vine to our northern latitude, is given up. But experiments on this matter have since established that the foreign grape vine, planted in a cold glass vinery (without fire or artificial heat), dependant upon the sunshine alone, will be entirely successful. The cold and frosts of April will not penetrate within the glass, and overcome the natural heat within, to hurt the growing vine; nor the cold and frosts of September and October, and sometimes November, will not penetrate to hurt the ripening fruit. Thus a summer is provided of from 7 to 8 months continuance, and free from frost, with a climate to be regulated by a thermometer, and at any degree of heat desired, day and night, above the climate of the place of the nativity of the grape, the forcing power and growth of the vine and fruit thus matured, can only be credited by actual observation.

When the vines have performed their functions, and the crop is gathered, the vinery is to be opened to the season, that the vines may cast their foliage, be trimmed, and laid down for their winter rest. They are thus kept in health, and escape diseases liable to befall vines in the heated house with exotic plants, continually growing and without rest for a series of years.

The entire success of this new system of the cold vinery for the grape, has been made certain by specimens of fruit, large and fine beyond example, and exhibited at the fairs of the American Institute, the two years past. In October last, at the fair of the American Institute, at Castle Garden, New-York, and also at the agricultural fair at Albany, gratifying specimens of the culture of the grape in a cold vinery, and without fire, were exhibited from the gardens of different gentlemen. Some were from the

garden of Mr. P. S. Van Rensselaer, of New Hamburg, Dutchess county, and among them were exhibited clusters of the "Grape of Canaan," sometimes called the Palestine Grape, measuring from the vine from 27 to 30 inches in length, and weighing from 5 to 7 pounds a cluster.

The witnesses are therefore numerous in favor of the culture and encouragement of the foreign grape vine in this country.

The native grape of this country, when ripe, has a tendency to acetous fermentation and decay. The juice of the foreign grape is saccharine, with a tendency to granulate and to dry into preservation. The grapes of this country generally require a season of from about three to three and a half months to ripen. The saccharine fluid of the foreign grape is slow in its ripening, and requires a season according to varieties, of from three and a half to six and seven months. The grape of Canaan and the purple grape of Damascus will illustrate. Several years ago I endeavored to grow these grapes with the Burgundy, Chasselas, and others in the open air; they grew, and in the hot months promised well, but the fruit of the former were cut off by frosts when about half formed. We have since introduced them into our cold vinery, where they are now growing with very fair success; they require a soil suited, great heat, and a season of from six to seven months to ripen into full maturity.

These facts will regulate the selection and the treatment of the different varieties of the vine. England and ourselves might now contest with the vineyards and the wine countries of the continent, and win the premium on table grapes, for improvement in size, tenderness of skin, virgin bloom, delicacy of fruit, and equal flavor. Horticulture, with its ingenuity and the sciences at hand, will not linger long behind the occasion.

When Carolina and our southern friends shall have completed their monument in memory of prejudice, persevering opposition and unmitigated hostility to "internal improvements," their more congenial soil and climate will enable them to reap the harvest and take the premium for production and improvement from us all.

The American Institute, of which you are a member, desire me to proffer their obligation to you for submitting to their observation, the volumes of your work, of so much labor to you, so gratifying to them, and so creditable to yourself. Their best wishes will attend you.

I hasten to return the volumes so kindly submitted to my examination, and within the time limited for my retention, and send this note of my high commendation.

Permit me to proffer assurances of regard.

I am truly yours, &c., &c.,

JAMES TALLMADGE.

C. L. FLEISCHMANN, Esq., U. S. Consul, Stuttgart, Wurtemberg.

CULTIVATION OF TOBACCO IN OSWEGO COUNTY, N. Y.

The tobacco plant mentioned in the following letter was received in good order, and placed on exhibition at the late Fair, where it attracted much attention.

LIVERPOOL, OSWEGO CO., N. Y., Oct. 2, 1852.

Dear Sir—I send you this day a tobacco plant I have selected, a late plant in order to show more of the appearance of the weed in its natural state. It is of fair growth, but not as large as the earlier plants. On its arrival you will make such disposition of it as you judge proper. The growing of tobacco in this county is a new branch of agriculture, and is increasing. I was among the first who produced it here. It was regarded by most farmers as an experiment likely to fail. I have raised a crop ranging from five to thirty acres each year since 1846, and have had as good success as I anticipated. Most of the farmers in this vicinity who have suitable soil, are now raising crops, mostly small, from one to five acres. The seed is cautiously sown about the first of April. We select for the plant bed a warm location on the southerly side of a building or board fence, which breaks off the cold northerly winds which prevail in the spring. We manure the bed with rotten barn-yard manure, or manure from the hog-

pen, that producing less weeds. We pulverize the soil thoroughly, then sow on the seed broadcast, an ounce to four square rods being sufficient. Great care should be taken to spread the seed equally over the surface; then without raking the bed, roll with a heavy roller, which serves to retain the moisture in the bed. In dry weather the seed bed should be kept moistened by watering the surface, or the young plants will die.

We get our plants large enough for transplanting about the 10th of June, and set them as rapidly as the work can be accomplished, finishing by the 25th of June. I have transplanted as late as the 5th of July, and had the crop come to maturity. The soil most suitable for tobacco is loam; when clay predominates, the plant will obtain but a small growth. When sand is predominant, the plant is likely to be affected by drouth. The time between transplanting and harvest is so short that unless we can produce a rapid growth, the plant will not arrive at maturity early enough to escape the frosts of Autumn. We commence our harvest about the first of September. The crop this season is good, and all secured without damage from frost, and buyers are now contracting at prices from 8 to 10 cents. We get from an acre from 1,200 to 1,800 pounds. I have had crops which would make a ton to the acre. That, however, is an unusual growth; 1,500 pounds is perhaps full up to the average. I have taken some pains to send the plant in as good order as may be. When it arrives you will dispose of it as you think best.*

I am yours respectfully,

MAUS NEAMY.

RICHARD PENNELL, M. D.

SELECTING SOILS FOR ANALYSIS.

We are often applied to for information as to the proper method of taking a specimen of soil from a field for the purpose

* The Syracuse Journal states that about 1,000 acres of tobacco were grown in Onondaga county the past season; and that the average crop is about 1,400 lbs. per acre, though 2,000 lbs. are often produced. The entire crop of the county is estimated at 2,240,000 lbs., which at ten cents, makes the snug sum of \$224,000, gained by the cultivators, but totally lost, wasted, and worse than thrown away by the consumers. Last year, the best quality, known as seed leaf, brought fifteen cents per pound. At present rates, or even at six or seven cents, it is considered a profitable crop.

of analysis. Upon enquiry, we found those whom we supposed most conversant with the subject, to differ somewhat in regard to it, though perhaps not essentially. We will here state our best information relative thereto. Those who till the soil are generally very competent to determine whether the lot, field, or farm, is uniform in its texture and composition. When it is so, we would select eight or ten acres, and from these take our samples. We shall consider the surface soil to extend about the usual depth of plowing, say six or seven inches, and if we wish an analysis of surface and subsoil separate, or one only, we should proceed with wheelbarrow and spade to five selected spots in the field, and throw into the barrow a spade full of surface soil, taken to the depth of six inches, from each place. The mass thus collected should be intimately mixed, of which one pint is enough to send to the chemist. For the subsoil, the same quantity should be taken from a depth of not less than twelve inches, and treated in the same manner. If the land is composed of soils differing essentially, they must be treated separately in order to obtain useful analyses.

A. C.

INTERNATIONAL EXCHANGES.

PARIS, May 8, 1853.

MR. A. CHANDLER,

Secretary of the American Institute, N. Y. :

Sir—I have the honor of addressing to you thirty-three volumes and pamphlets, relative to industry, agriculture, horticulture and statistics, presented to the American Institute, in the name of their Excellencies the Ministers of France and Belgium, and by Mr. Henschling, one of the first statistical writers in Europe.

Allow me, Mr. Secretary, to take this opportunity to express once more my feelings of gratitude for the kind hospitality with which I have always been received by the members of the Institute whenever I have had the happiness of being present at their meetings, to which I am proud to belong as an honorary member.

I have the honor to remain,

Dear sir, your very humble serv't,

ALEXANDER VATTEMARE.

Catalogue of the Books and Pamphlets received as above from Mr. Vattermare.

Catalogue of the collection in the Industrial Museum, Brussels ; 8vo, 1846.

Extract from the Journal of the Economists, Belgium ; quarto, pp. 8

Disease of the Grape Vine in the south of France and in Italy, by Victor Rendu, Inspector General of Agriculture, Imperial Press, Paris ; 8vo, pp. 116.

Horse Shoer's Manual, Brussels ; duo., pp. 75.

On the Bit Regulator Bridle, with plates ; 4to, pp. 4.

Biographical notice of Baron de Reiffenberg, by Xavier Henschling ; Cologne, Bonn and Brussels ; 8vo, pp. 27.

Exhibitions of Belgian Industry, Brussels ; 8vo, pp. 101.

On the Influence of Lakes, Ponds, &c., on Human Life, by Henschling ; small 8vo. pp. 5.

Horticultural Institute of the Belgian Government, Theoretical and Practical, by Louis Van Houtte, Ghent ; 8vo, pp. 40.

Project of a Law relative to Patents ; 8vo, pp. 20.

Relation of Imposts to Agriculture ; 8vo, pp. 6.

Diseases of Grape Vines, by LeClerc, Paris, with plates ; 8vo, pp. 80

New Consideration on the Effect of Imposts on Revenue, by Henschling, Brussels ; 8vo, pp. 37.

General Indicator of Belgian Products, exhibited at the Crystal Palace, London ; 2o, pp. 142.

Treatise on the Pruning and Culture of Fruit Trees, with drawings, Ghent ; 8vo, pp. 114.

Annual of Belgian Industry, 1848 ; 2o, pp. 222.

Historical and Statistical Bibliography of France, by Henschling, Brussels, 1851 ; large 8vo, pp. 53.

Vattermare's Report on the Metrical Weights and Measures sent to be government of the United States by him, 1852.

Bulletin of the Central Committee of Belgian Statistics ; Births in Brussels compared with the population, by Henschling, Secretary of the Committee ; 4to, pp. 41, from vol. 1.

Civil Affairs of Belgium, by Henschling ; 4to, pp. 16, from vol. 2.

General Review, Population, &c. ; 4to, pp. 19, from vol. 2.

On the Increase of Belgian Population ; 4to, pp. 20, from vol. 1.
Statistics of the Kingdom of Bavaria ; 4to, pp. 37, from vol. 4.
Historical and Statistical Bibliography of Germany, by Henschling;
8vo, pp. 112'.

Memoirs of the Society of Natural Sciences of Cherbourg, 1852 ;
8vo, pp. 96. They ask for exchanges.

Biographical notice of William Benjamin Craan, author of the
plan of the Battle of Waterloo, with a glance at the graphic
works of Belgium to this day ; 8vo, pp. 22, 1852.

New table of Mortality in Belgium, 1851 ; 8vo, pp. 7.

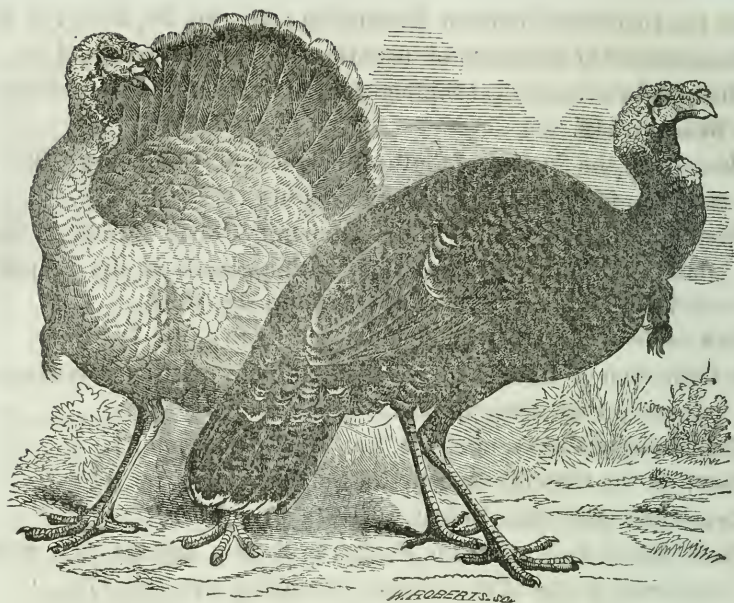
A Collection of Laws and Regulations now existing relative to
patents ; 1846, 8vo, pp. 562.

Exhibition at Poissy, of cattle, &c., 1853 ; 8vo, pp. 24.

Essay on the General Statistics of Belgium ; 8vo, pp. 116.

Exposition of Belgian Industry, 1847 ; 8vo, pp. 101.

Cattle Show, &c., at St. Lo, Toulouse, Nancy, Amiens, &c., with
numerous plates of the animals exhibited; 8vo, pp. 475.



AMERICAN WILD TURKEY.

(Communicated by Sam'l Van Wyck, Esq.)

To give a correct, intelligible history of the American domestic turkey, we must give a pretty minute account of the wild turkey of America, from which our tame ones all originally sprung. The wild turkey is a bird peculiar to America, this the best ornithologists admit. It is of the genus or family *gallinacæ*, and of the order or species *maleagris gallopavo*: The native country of the wild turkey extends from the north-western part of the United States, to the Isthmus of Panama, south of which it is not to be found, notwithstanding the statements of some authors and travellers who have mistaken another bird for it, and that possibly somewhat resembled it. In Canada, and the more densely peopled parts of the United States, wild turkeys were formerly very abundant; but like the Indian and Buffalo, they have been compelled by the destructive energy of the white settlers, and perhaps sometimes wantonly exercised, to seek refuge in the remotest parts of the interior. *Civilization* too, is more hostile to most barbarous nations and all wild animals; they withdraw from it, with almost as much precipitation and terror, as from the assaults of an open active enemy; although more gradual

in its results, it is sure, ultimately, to effect the destruction of both. The one tries to get beyond its reach by travelling, and taking up his residence in the distant and uninhabited wilderness, and the other flees to the deepest recesses of the remote forest for preservation.

To give a good history of the wild turkey, it is necessary to consult several authors of the highest reputation on the birds of our country; among these, Audubon, Wilson and Bonaparte, and Nuttall's Ornithology of America and the United States, with some others. The authors here named stand highest, and may be safely relied on—they have all resided many years in the United States, and travelled over a large portion of our continent to enable them to give the most accurate history of its birds—and especially Audubon. This gentleman studied most assiduously his subject for more than twenty years, and that in the only book free from error and contradictions, the great book of nature. His observations, principally made in the western, south and south-western and north-western States, enable us in consequence to enrich the present article with several new details of the manners and habits of the wild turkey. The wooded parts of Arkansas, Louisiana, Tennessee and Alabama; the unsettled portions of the States of Ohio, Kentucky, Indiana and Illinois; the vast expanse of territory south-west and north-west of these States, on the Mississippi and Missouri, as far as the forests extend, are more abundantly supplied than any other parts of the Union with this valuable game, and forms so important a part of the subsistence of the hunter and traveller in the wilderness. It is not probable that the range of this bird extends to or beyond the rocky mountains. The Mandan Indians, who a few years ago visited the city of Washington, considered the turkey as one of the greatest curiosities they had seen, and prepared a skin of one to carry home for exhibition. Still this bird may be found there in time, as it is a very extensive country, and as yet a large portion of it very imperfectly explored; or it may travel and flourish there, as the climate, soil, and products of many parts of both sections, east and west of the mountains, are very similar. The wild turkey is not very plenty in Florida, Georgia, and the Carolinas; is still less frequently found in the western parts of Virgi-

nia and Pennsylvania; and is extremely rare in the remaining northern and eastern parts of the United States. We have it, though, from the best authority, that wild turkeys are yet to be found in the mountainous districts of Sussex county, New Jersey. The most eastern part of Pennsylvania now inhabited by them is Lancaster county; and they are often observed in the oak woods near Philipsburgh, Clearfield county. Those occasionally brought to the Philadelphia and New-York markets, are chiefly obtained in Pennsylvania and New-Jersey, and, as may be readily supposed. in either of these States they are not very abundant. The wild turkeys do not confine themselves to any particular food; they eat maize or Indian corn, all sorts of berries, fruits, grains and grasses; and even tadpoles, young frogs and lizards, are occasionally found in their crops; but where the pecan nut, a variety of the hickory, is plenty, they prefer that food to every other. Their more general predilection is, however, for the acorn, or mast, on which they readily fatten. When an unusually profuse crop of acorns is produced in a particular section of country, great numbers of turkeys are enticed from their ordinary haunts in the surrounding districts, where the acorn abounds. This food, owing to its abundance, as it is to be found more or less in all our large forests, is one reason why it is a favorite with the turkey; it is more easily procured, and can be depended on with more certainty. About the beginning of October, while the mast still remains on the trees, they assemble in flocks, and direct their course to the rich bottom lands. At this season they are observed in great numbers on the Ohio and Mississippi. The time of this irruption is known to Indians by the name of the *turkey month*. The males, usually termed gobblers, associate in parties numbering from ten to a hundred, and seek their food apart from the females; whilst the latter either move about singly with their young, then nearly two-thirds grown, or in company with other females and their families, form troops, sometimes consisting of seventy or eighty individuals, all of whom are intent on avoiding the old males, who, whenever an opportunity offers, attack and destroy the young by repeated blows on the head. All parties, however, travel in the same direction, and on foot, unless they are compelled to seek their individual safety by flying from the hunter's dog, or their march is impeded by natural obstructions.

When the turkies have surmounted all difficulties, and arrived in their land of abundance, they disperse in small flocks, composed of individuals of all sexes and ages intermingled, who devour all the mast as they advance ; this occurs about the middle of November. It has been observed, that after these long journeys, the turkies become so familiar near the farm-houses and plantations, as to enter the stables and corn cribs in search of food ; in this way they pass the autumn, and part of the winter. During this season, great numbers are killed by the inhabitants, who preserve them in a frozen state, in order to transport them to distant markets. Early in March they begin to pair ; and for a short time previous, the females separate from and shun their mates, though the latter pertinaciously follow them, uttering their gobbling notes. The sexes roost apart, but at no great distance, so that when the female utters a call, every male within hearing responds, rolling note after note, in the most rapid succession ; not as when spreading the tail and strutting near the hen, but in a voice resembling that of the tame turkey, when he hears any unusual or frequently repeated noise. Where the turkeys are numerous, the woods from one end to the other, sometimes for hundreds of miles, resounds with this remarkable voice of their wooing, uttered responsively from their roosting places ; this is continued for about an hour, and on the rising of the sun, they silently descend from their perches, and the males begin to strut, for the purpose of winning the admiration of the females. If the call be given from the ground, the males in the vicinity fly towards the individual, and whether they perceive her or not, erect and spread their tails, throw the head backward, distend their comb and wattles, strut pompously, and rustle their wings and body feathers. While thus occupied, they occasionally halt to look out for the female, and then resume their strutting and pompous movement. During this ceremonious approach, the males often encounter each other, and fierce battles ensue, when the conflict is only terminated by the flight or death of the vanquished. When mated for the season, one or more females thus associated, follow their favorite, and roost in the immediate neighborhood, if not on the same tree, until they begin to lay, when they change their mode of life, in order to save their eggs, which

the male uniformly breaks, if in his power, that the female may not be withdrawn from his company and attention. At this time, the females shun the males during the greater part of the day; the latter become clumsy and careless, meet each other peacefully, and cease to gobble. The sexes then separate; the males being thin and meagre, retire and conceal themselves by prostrate trees in secluded parts of the forest, or in the almost impenetrable recesses of a cane break. Rather than leave their hiding places, they suffer themselves to be approached within a short distance, when they seek safety in speed of foot; at this season, however, they are of none or very little value to the hunter, being quite lousy and covered with tick. By thus retiring, and feeding on peculiar grasses, they recover their flesh and strength; and when this object is attained, again congregate, and commence their rambles. About the middle of April, when the weather is dry, the female selects a proper place in which to deposit her eggs, secured from the encroachment of water, and as far as possible, concealed from the watchful eye of the crow; this crafty bird espies the hen going to her nest, and having discovered the precious deposit, waits for the absence of the parent, and removes every one of the eggs from the spot that he may devour them at his leisure.

The nest is placed on the ground, either on a dry ridge in the fallen top of a dead leafy tree, under a thicket of sumach or briars, or by the side of a log; it is of a very simple structure, being composed of a few dried leaves. In this receptacle the eggs are deposited, sometimes to the number of twenty, but more usually from nine to fifteen; they are whitish, spotted with reddish brown, like those of the domestic turkey. Their manner, number of eggs, period of incubation, &c., appear to correspond throughout the Union, as Messrs. Audubon, Wilson and others, have received similar accounts from the northern limits of the turkey range, to the most southern regions of Florida, Louisiana, and the western wilds of Missouri. The female always approaches her nest with great caution, varying her course so as rarely to reach it twice by the same route; and on leaving her charge, she is very careful to cover the whole with dry leaves, with which she conceals it so carefully, as to make it extremely

difficult, even for one who has watched her movements, to indicate the exact spot. When laying or sitting, the turkey hen is not easily driven from her post by the approach of apparent danger; but, if an enemy appears, she crouches as low as possible, and suffers it to pass. A circumstance related by Audubon, will show how much intelligence they display on such occasions: having discovered a sitting hen, he remarked, that by assuming a careless air, whistling or talking to himself, he was permitted to pass within five or six feet of her; but if he advanced cautiously, she would not suffer him to come within twenty paces, but ran off twenty or thirty yards, with her tail expanded, when assuming a stately gait, she paused on every step, occasionally uttering a chuck. They seldom abandon their nests on account of being discovered by man, but should a snake or any other wild animal suck one of her eggs, the parent leaves them altogether. If the eggs be removed, she again seeks the male and recommences laying, though otherwise, she lays but one nest of eggs during the season. Several turkey hens sometimes associate perhaps, for mutual safety, and deposit their eggs in the same nest, and rear their broods together. Mr. Audubon once found three females sitting on forty-two eggs. In such cases, the nest is constantly guarded by one of the parties, so that no crow, raven or pole cat, dares approach it. The mother will not forsake her eggs when near hatching, while life remains; she will suffer an enclosure to be made around and imprison her, rather than abandon her charge.

Mr. Audubon witnessed the hatching of a brood while thus endeavoring to secure the young and mother. "I have lain," says he, "flat for some time within a few feet, and seen her gently rise from the eggs, look anxiously towards them, cluck with a sound peculiar to the mother on such occasions, remove carefully each half empty shell, and with her bill caress and dry the younglings, that already stand tottering and attempting to force their way out of the nest." When the process of incubation is ended, and the mother is about to retire from the nest with her young brood, she shakes herself violently, picks and adjusts her feathers about the breast and under parts of her body, and assumes a different aspect; her eyes are alternately inclined oblique-

ly upwards and sideways; she stretches forth her neck in every direction, to discover birds of prey or other enemies; her wings are partially spread, and she softly clucks to keep her tender offspring close to her side. They travel slowly at first, and as the hatching generally occurs in the afternoon, they sometimes return to pass the first night in the nest. While very young the mother leads them to elevated dry places, as if aware that low wet ones, during the first few days of their life, would be very dangerous to them, they having then no other protection than a delicate, soft, hairy down. In very rainy seasons wild turkeys are scarce, because when completely wetted, the young rarely survive. At the expiration of about two weeks, the young leave the ground or neighborhood where they were hatched, and rested or slept at night under the female. The time then approaches in which they seek the open ground or prairie land during the day, in search of strawberries, and subsequently dewberries, blackberries, and grasshoppers, thus securing a plentiful food, and enjoying the influence of the genial sun. They frequently dust themselves in shallow cavities of the soil, or on ant hills, in order to clean off the loose skin of their growing feathers, and rid themselves of tick and other vermin. The young turkeys now grow rapidly, and in the month of August, when several broods flock together and are led by their mothers to the forest, they are stout and quite able to secure themselves from the unexpected attacks of wolves, foxes, wild cats, and even cougars, by rising quickly from the ground, aided by their strong legs, and reaching with ease the upper limbs of the tallest tree. The large diurnal and nocturnal birds of prey are also much dreaded by the turkey. In most cases, though, he contrives to elude the attacks of these by his remarkable swiftness of foot, aided occasionally by his wings, and his great instinctive sagacity in quickly discovering danger and parrying its thrusts, however artfully made. On hearing the slightest noise, for which they are all on the watch, wild turkeys conceal themselves in the grass or among shrubs, and thus frequently escape the hunter and sharp-sighted birds of prey. Wild turkeys are very tenacious of their feeding grounds, as well as the trees on which they have once roosted. Flocks have been known to resort to one spot for a succession of years, and to return

after a distant emigration in search of food. Their roosting place is mostly on a point of land jutting into a river where there are large trees, and where they can seclude themselves more effectually from their enemies. The most wily and destructive of these, after all, is man; he avails himself of his reasoning faculties, studies the habits of the wild turkey in a way which no other animal does or can, and whether with the gun, the trap, or pen, he makes greater havoc among them, and thins their numbers faster than all the wild animals of the forest together. Audubon and others say, that no position, however secluded or difficult of access, can secure them from the attacks of the artful and vigilant hunter, who, when they are all quietly perched for the night, takes a stand previously chosen by daylight, and when the rising moon enables him to take sure aim, shoots them down at leisure, and by carefully singling out those on the lower branches first, he may secure nearly the whole flock. The presence of the hunter, while making this slaughter, nor the report of his gun, seem to frighten the turkies in the least, although the appearance of a single owl or other bird of prey would be sufficient to alarm the whole flock. This fancied security or heedlessness of danger while at roost, is said to be characteristic of all the gallinacious birds of North America. Pens is another mode of taking them, more common and more destructive, even, than shooting them. These are made of logs, close and large enough to contain almost any number. They are baited by grain of various kinds, though mostly Indian corn, and enticed through an opening left for the purpose, the grain or feed being liberally spread on the floor within, and for some distance outside. One or two leaders will, in this way, sometimes lead in and secure a great many, say a hundred or more. In proportion to the abundance or scarcity of food, and its good or bad quality, they are small or large, meagre, and of an excellent or indifferent flavor; in general, however, their flesh is much more delicate, more succulent, and better tasted than that of the tame turkey. They are in the best order late in the autumn, or in the beginning of winter. The Indians value this food so highly when roasted, that they call it "the white man's dish," and present it to strangers as the best they can offer. This shows what the Indian, the native of the coun-

try of the wild turkey, thought of it as food, and how greatly he estimated it. It is highly probable that the wild turkey cannot obtain such suitable food in Mexico as he can in the United States. Hernandez and other writers and teachers say, that their flesh is harder and in all respects inferior to the domestic bird of that region; a strong circumstance to show that the United States is the original native land of the wild turkey, especially as the latter is considerably larger and superior in the delicacy and flavor of its flesh to the tame one of the Union. Among the benefits conferred by America on the rest of the world, the gift of this noble bird should occupy a distinguished place, as unquestionably one of the most useful of the feathered tribe, being capable of administering largely to the sustenance and comfort of the human race.

On this account it has been eagerly sought by almost all nations, and has been naturalized with astonishing rapidity throughout the world, almost universally constituting a favorite banquet dish. The turkey, belonging originally to the American continent, was necessarily unknown to the ancients, who in this, as in many other instances, were deficient in some of our common as well as most essential articles of food. Readers unacquainted with the fact may well be surprised to learn, that although the introduction of this bird into Europe is comparatively modern, its origin has in some measure been lost sight of, and that naturalists who stood high in the last century, and who lived much nearer to the time of its first appearance, have expressed great uncertainty concerning its native country. Thus Belon, Aldrovandi, and others, thought it came originally from Africa and the East Indies, and endeavored to recognize it in some of the domestic birds of the ancients. These gentlemen supposed it was mentioned by some ancient authors, but they mistook for it the *humida Meleagris* of Linné, which is no doubt an African bird, now almost naturalized in America, in a wild state, so that it would be more reasonable for the latter country to regard this as indigenous, than that the old world should lay claim to the turkey. It would be loss of time to combat the arguments advanced by some authors who have deceived themselves in attempting to deprive America of her just title to this bird, since they have

been fully refuted by the eloquent Buffon, the unrivalled naturalist of his day, who unqualifiedly gives America, as the true place of its nativity.

The first description of the turkey was given by Ciriedo, in 1525, in the summary of his History of the Indies. This bird, it is said, by several good authorities, was sent from Mexico to Spain, early in the sixteenth century; from Spain it was introduced into England in 1524; France, some years after, whence they spread into Germany, Italy, &c. A few, however, had been carried to the latter country by the Spaniards some years previously. The first turkey eaten in France, appears to have been served up at the wedding banquet of one of her kings, in the year 1570. Europeans conveyed them to all their colonies, and thus were they gradually introduced into Asia, Africa, &c. The French distinguished them by the name of *coq et poul d'Inde*, (cock and hen from India,) because they supposed them natives of the West Indies. Subsequently, for the sake of brevity, they called them Dindon, a name which is still retained. The English name is even worse, as it conveys the false idea that the turkey originated in Asia, owing to the ridiculous habit formerly prevalent in the old world, of calling every foreign uncommon object by the name of Turk, Indian, &c.

There are two *Encyclopaedias* printed in our country, both quite voluminous works, the one called *Americana*, the other *American*; the former devotes not quite a column to a description of the wild turkey, and is tolerably fair as far as it goes, but is rather short and general, considering the importance of the subject; the latter does not occupy two lines; we will give the precise words: "Turkey, a large domestic fowl, supposed to be brought from Turkey." This laconic history of the bird does not accord much with the first half of the title of the work *American*. Short, as it is, it contains a gross error, in giving the supposed native country of the turkey. He has been styled by some silly, he is susceptible of very strong lively emotions, which do not accord with weak intellect; let any sharp sound like whistling, strike his ear, and it excites his ire, or any thing red strike his sight, and he shows both courage and anger on such occasions. The

great Franklin thought so highly of the bird, that he expressed regret, that it should not have been preferred to the bald eagle as an emblem of the United States. We will here insert a letter written by the old revolutionary patriot, in his plain, clear, nervous style, soon after the question was decided. "For my own part," he says, "I wish the bald eagle had not been chosen as the representative of our country; he is a bird of bad moral character, he does not get his living honestly; you may have seen him perched on some dead tree, where too lazy to fish for himself, he watches the labor of the fishing hawk, and when that diligent bird has at length taken a fish, and is bearing it to his nest, for the support of his mate and young ones, the bald eagle pursues, and takes it from him. With all this injustice, he is never in good case, but like those among men, who live by sharpening and robbing, he is generally poor, and often very lousy; besides, he is a rank coward; the little king bird, not bigger than a sparrow, attacks him boldly, and drives him out of the district. He is, therefore, by no means a proper emblem for the brave Cincinnati of America, who have driven all the king birds from our country. I am on this account not displeased that the figure is not known as a bald eagle, but looks more like a turkey. For in truth the turkey is in comparison a much more respectable bird, and withal, a true original native of America. Eagles have been found in all countries, but the turkey was peculiar to ours. He is, besides, (though a little vain and silly, 'tis true, but not the worse emblem for that,) a bird of courage, and would not hesitate to attack a grenadier of the British guards, who should presume to invade his farm yard with a red coat on." Messrs. Wilson and Bonaparte say, in their work of American Ornithology—"so far from the wild turkey having gained by the care of man, and the abundance of food accessible in its state of domestication, it is inferior considerably in size, and greatly so in beauty; it has degenerated not only in Europe and Asia, but what is certainly extraordinary, even in its native country. The domesticated turkey of America, accustomed as it is to roam in the woods and open fields, almost without restraint, is in no respect superior to that of the European poultry yard. The male, wild, when full grown, is nearly four feet in length, and more than five in extent;

(breadth, we suppose, is meant, wings extended.) The bill is short and robust, measuring two inches and a half to the corner of the mouth: it is reddish, and horn color at tip: the superior mandible is vaulted, declining at tip, and overhangs the inferior, being longer and wider; it is covered at base by a naked, cere-like membrane in which the nostrils are situated, they being half closed by a turgid membrane, and opening downwards; the inferior mandible slightly ascends towards the tip; the head, which is very small in proportion to the body, and half of the neck, are covered with a naked bluish skin, on which are a number of red wart-like elevations; the naked skin extends further downwards on the inferior surface of the neck, where it is flaccid and membranous, forming an undulating appendage, on the lower part of which are cavernous elevations or *wattles*. A wrinkled, fleshy, caruncle, hairy, arises from the bill at its junction with the forehead; when the bird is quiescent, this is not much more than an inch and a half long; but when he is excited by love or rage, it becomes elongated, so as to cover the bill entirely, and depend two or three inches below it. The neck is of a moderate length and thickness, bearing on its lower portion a pendant fascicle of black rigid hairs, about nine inches long, and also called the pectoral appendage." We omit much of this description; it is minute and long, but like the whole account of this interesting bird, is ably and clearly given. The female, or hen turkey, is considerably smaller in size, being three feet and a quarter long, the bill and feet resemble those of the male, but are proportionably smaller, the latter being destitute of even a rudiment of spur. These authors remark, that the female which furnished the above description, though certainly adult, had not attained to its full size and most perfect beauty. It was procured in the month of March, on St. John's river, Florida. The male was selected from among many fine specimens shot in the month of April, near Engineer cantonment, on the Missouri. It weighed twenty pounds, but as the males are very thin at that season, when in good condition, it must have weighed much more. On the approach of the first winter, the young males show a rudiment of the beard or fascicle of hairs on the breast, consisting of a mere tubercle, and attempt to strut and gobble; the second

year the hairy tuft is about three inches long; in the third, the turkey attains its full stature, although it certainly increases in size and beauty for several years longer. Females of four years old, have their full size and coloring; they then possess the pectoral fascicle, four or five inches long, which according to Audubon, they exhibit a little on the second year, if not barren; this fascicle though is much thinner than that of the male. The barren hens do not attain this distinction, until quite an advanced age, and being preferable for the table, the hunters single them from the flock, and kill them as being superior to others. The female wild turkey is more frequently furnished with the hairy tuft than the tame. The great number of young hens without it, has no doubt given rise to the incorrect assertion of a few writers, that the female is always destitute of it.

The weight of the hen generally averages about nine pounds. Audubon has shot barren hens, in strawberry time, weighing thirteen pounds, and he has seen some few so fat as to burst open by falling from a tree after being shot. Wild animals generally are not only larger than tame ones of the same species, but they are considerably more tender, and their tenderness continues more or less through life. If killed at the right season, and when in a good state, their flesh is more juicy and of a more delicious flavor. The flesh of deer, or venison, is more delicate and fine in a wild state, than when kept and fattened in parks or large inclosures; high feed and a domesticated life generally deteriorate their flesh for the table. It is said, too, they are not so long lived; the same we should suppose with the turkey. Audubon says male turkies of thirty pounds are not rare; he also says he saw one in the Louisville market that weighed thirty-six pounds; the pectoral appendage of this bird measured over a foot in length. Bartram describes a specimen of great size and beauty, reared from an egg found in the forest and hatched by a common hen. When this turkey stood erect, the head was three feet from the ground; the animal was stately and handsome, and did not seem insensible of the admiration he excited. The wild turkey is of a glossy dark color; he is generally called black; he is not black, like the crow, he is more of a ferruginous or iron color, with small shining coppery bronze spots, especially on the wings and tail. Audubon

says, "In the wild state, a white or even a speckled turkey is unknown, and we venture to say that a plain black one has hardly ever occurred." As now characterised and acknowledged, the present genus of this unrivalled bird is exclusively American, and by the discovery of a beautiful species, closely allied to that of the United States, it now consists of two species. The oculated turkey (*Meleagris oculata*) inhabits Honduras, in South America, and may be distinguished from the common or original species of North America or of the United States, in its being of a smaller size, possessing a more brilliant plumage, and principally by its having oculated spots (something like eyes) on the tail. It was first discovered by Cuvier, and has lately been figured in that splendid periodical work, the "*Planches Coloriées*," of Temminck and Langier. A beautiful specimen has been exhibited in the Charleston Museum of South Carolina.

Meleagris gallopavo, Lin. Common Turkey—"Body black above the breast, and glossed with violet and gold; head and upper part of neck with a blue papillated and hairy skin; feathers of the tail brown, varied with black. The female has smaller wattles, and is incapable of erecting the feathers of the tail, $3\frac{1}{2}$ feet long; inhabits North America; bill short and thick, base covered with a naked skin; head and upper part of the neck invested with a naked tuberculated skin; a loose caruncle on the upper part of the bill; throat with a longitudinal, pendulous and carunculated wattle, tarsi of the male, with an obtuse and weak spur." *Meleagris oculata* of Honduras, as described by Cuvier, "head and neck naked; back, rump and breast, golden green, banded with glossy violet; primaries white, spotted with black; secondaries white; tail feathers wedge-shaped, griseous, spotted with black, the top green, shining with violet and gold; bill horny, $3\frac{1}{2}$ feet long."

The color of most wild animals is considerably darker than the same species in a tame or domestic state; the former are more exposed to the weather and sun, no protection except what the trees of the forest sometimes give them. If the natural color of the animal in a wild state is red or brown, it is generally of a much deeper shade. Neat cattle, in former times, when found in

a wild state, were nearly all black, some, perhaps, a shade lighter than others. Hence the designation of them by all travellers and writers as *black cattle*, and this, whether tame or wild, black or white, no matter what their color; and they are so designated by many writers of the present day. Color, too, is often caused or changed by the food of the animal; some vegetables, by undergoing a certain process, will make red or black; it is a part of the organism of some plants to make or give, in the hands of the chemist, these colors bright and durable. So the change which plants undergo by the process of mastication and digestion in the stomachs of animals will throw open the pores and blood vessels, produce a change of color on the surface of the body, whether this be covered with hair or feathers. It is well known that cattle feeding on madder, a plant from which the most beautiful red or scarlet is made, will, after a little while, change color; even the horns and hoofs will turn red. This is continually shown now in countries where they raise madder, as cattle, in a certain stage of its growth, eat it freely. It will also discolor the milk of cows.

The turkies above mentioned, found at the present day in the mountains, and woods adjacent to them, of some parts of Pennsylvania and New Jersey, are, we should think, not the pure wild turkey, although they are called so; they are more probably a cross between the wild and tame. As the settlements advanced south and west, the wild turkey fled from the Middle States, and migrated to the wilderness of the southern and western portion of the United States. A few, no doubt, were left behind, and these would associate clandestinely more or less with the tame turkies, on the farms in the neighborhood of the mountains and forests where these wild ones resorted or lived. Hence the present mongrel race of turkies, which inhabit certain parts of Pennsylvania and New-Jersey, mostly sprung; they are very few comparatively, and are yearly diminishing, and will in time probably disappear altogether. The vigilant and incessant pursuit of them by the numerous hunters, will, we believe, ultimately exterminate them. They are considered, and no doubt are, superior to the tame one for the table, and will command in our markets a higher price, and sell much more readily. This of course stimulates the

chase and pursuit of them, as they are the most profitable game. It is well known that in our own State, New-York, we have some of this valuable game left yet on our mountains, but we think considerably less than the States above named. In Virginia, and some States west of the mountains, owing to the greater range the bird has, there are considerable numbers of the pure wild turkey to be found ; but as population progresses in this direction, the turkey will continue his migratory travels further south and west, and he will become scarce in these regions, if he is not now. The wild turkey depends more upon his feet and legs, in both travelling and avoiding his enemies, than on his wings ; he cannot fly far at a time ; he can ascend the highest trees, and does, if necessary, to escape danger ; he relieves himself by using both alternately, according to circumstances ; no animal can run much faster or longer among trees, bushes and grass.

In writing this article, we have been obliged to use considerable search in examining some of the best authors on the subject, like Audubon, Wilson and Bonaparte, Nuttall and some others. The three first named have resided some years in different parts of our country, and have shewn great industry in procuring information from the most authentic sources, as well as personal observation, whenever possible. Audubon's work on American Ornithology is now well known, not only here, but in Europe ; its great reputation has been earned, not only by its faithful and characteristic descriptions, but by the splendid and lifelike plates and drawings it contains of the objects or animals described. It is truly an American work, and as such should be patronized by every public institution in our country that is able to purchase it. It is undoubtedly a costly work, and very few individuals can afford to buy it, and not every public establishment ; but those that can should not hesitate a moment. It would not only be owning a work of great merit, but spreading wider the good it may do. Besides, it would be encouraging the American spirit and feeling which got it up and brought it into existence. Wilson and Bonaparte we have obtained the greatest number of facts from, relative to the turkey ; we found them here more together, and more of them, and under the same head or chapter, and in selecting

them may sometimes have used their very words; without giving credit for them, by the usual marks of quotation. If so, we beg leave to refer our readers to the book itself, and give credit in their own minds for the omission, and excuse us for any other errors we may have committed in writing this article, as there are probably many. The work last named is also one of unquestionable merit.

AMERICAN TAME TURKEY.

The domestic turkey is a very fine bird; it cannot be otherwise when its origin is taken into consideration. This has been fully shown to be purely American. The main objects to be inquired into now, are the qualities of the tame animal, the inducements for our farmers and people generally, who have the conveniences, to breed, raise, and fatten them, and the best way of doing these for profit. It is generally admitted, all over the world, wherever the turkey has had access, and been prepared and dressed properly for the market and table, there is no fowl of the poultry yard to be compared with it for quality and quantity of its flesh, and the delicacy and flavor of taste. The breast is larger round and deeper through to the breast bone; the meat of this is tender and white. The wings resemble it in color and tenderness, and a part of the breast, if properly cut, is attached to them. The little bones, joints, and pinions farthest removed from the body, are juicy and delicate; the dark or brown part, as it is called, including the thighs, back bone and side bones, are juicy, rich, and savory in the highest degree, especially the last two bones. No other bird can compete with it in quantity and delicacy of nourishing flesh; the tame goose and duck are inferior in all these respects, and besides, their meat is all darker, and not so inviting; the epicure can please the eye from the once as well as the palate, which adds to the relish. The goose and duck are found more or less all over the world, especially the northern parts of it. There are many species and varieties of them. The turkey, one kind only, the North American, differing somewhat in color and size, according to circumstances. It is a land bird entirely; it requires no water to swim and divert itself in to be healthy, like ponds, lakes, or good sized streams,

which are sometimes expensive. The animal, young and old, after the former attains a certain age, in a store state, can be kept cheaper than any other of the poultry yard. It is less troublesome in gardens and grounds adjacent to the homestead; it does not scratch and disturb the plants of these much. Let its propensity for roving be indulged, and it will get its living, and a good one, with occasionally a little feeding, in the woods and fields of the premises, subsisting on nuts and acorns in their season, and by picking up the grains which are lost in gathering, of wheat, oats, Indian corn, &c. Insects of almost all kinds, the bird is very fond of; of grasshoppers, slugs, beetles, &c., he devours a great many. These last not only aid in supporting him, but the farmer gets rid of a portion of his most destructive enemies. When the flock return home, as they unquestionably will, in the first of the season, when they begin their rambles, they should be fed with a little grain. This will induce them to return regularly, especially to roost, having been accustomed to do it in winter and early life. Regular kind treatment does much in forming the habits of most domestic animals, and those which are naturally docile, are most easily and permanently impressed with anything done by man to relieve their wants and add to their comforts. Geese, ducks, and common fowls are continually near the buildings; the last, especially, are very troublesome to gardens, and all young delicate plants, whether ornamental or edible, scratching them up and destroying or materially injuring them, and this unceasingly; it requires one person to be almost constantly watching them. This evil can be lessened and perhaps prevented by very high fences, made around the grounds and gardens near the house, or by confining the poultry in yards by themselves, and if eggs and chickens are the object, which it is thought are their chief profit, the quantity of food they consume almost the year round, all these united, it is thought, make them considerably more expensive than turkeys.

If farmers and those who raise the turkey, live in sections of our country where the wild, or more properly, mongrel breed exist, or have lately been found, it would be greatly to their interest to try and preserve or increase them, by endeavoring to

prevent or lessen the depredations of hunters, and by encouraging an association between this mixed race of the woods and mountains and domestic turkey. It requires little trouble if they are anywhere near; they are extremely partial to each other, and by certain signs and noises they give and make, are readily brought together. We have understood, from good authority lately, that farmers some years ago living near mountains in Pennsylvania and New-Jersey, where this mongrel race resorted and kept, have often had their turkey hens return home after being absent a few weeks, with a fine brood of young turkeys. They had set and hatched their eggs in the mountains or woods. The old hen with her young, would stay quietly at home, on being fed and cared for, until the latter got old and strong enough to travel some distance and to fly when they would begin to show their wild propensities, and absent themselves for a few days and return voluntarily. Besides this, they could easily be distinguished from the others by their feathers, which were darker and more glossy. At this period the owners generally made sure of them by cooping or confining them. They were handsomer and larger every way than the tame ones of about the same age, and would bring nearly a third more in market, if properly prepared, generally allowed to be superior every way, including flavor.

In several points of our high lands in our own State, including the Catskill mountains, we have been informed by those who knew the fact well, that there were many cases within the last forty years, of farmers living on these mountains, or in their vicinity, having their turkey hens return home after a little absence, with fine broods of young ones of this mongrel race, which added much to the profit and beauty of their flocks. Indeed we have been informed within a few weeks, by a gentleman in whom we can place confidence, that he shot in November last, (1852) on the Shawangunk mountains, about two or three miles from the Delaware and Hudson River canal, two wild turkies, so called in that neighborhood, large and handsome, with dark bright feathers, and fat, it being in the season of nuts and acorns. This gentleman, with others, dined on them and found them a first rate dish. This shows that the wild race is not yet extinct among us, even in our own State.

A gentleman told us within a few days, that some years ago he was invited with others, at a dinner given by the late Gouverneur Morris, on account of the British minister, then resident in our country. Mr. Morris told the latter, before dining, that he should taste of an American pheasant, which he (Morris) thought superior, in every respect, to the English. Mr. Morris had procured one of the New-Jersey mongrel turkies for the occasion, and which were seen quite often in our markets of that day, and dressed, of course, in the best style. The minister was helped to some, he ate of it freely and praised it much. "Morris," he asked, after a little while, "where is the American pheasant you spoke so highly of, I should like to see and taste it?" Mr. Morris answered, "that is it you were helped to, and have been eating; some of us here, on account of the beauty and high flavor of its flesh, call it the American pheasant; besides, it is a native of our country, and admitted to be so now all over the world, or by that portion of it who know anything of its history, and that, perhaps, makes us Americans a little more partial to it." The minister replied that it was as large as two English pheasants, and he supposed it to be a very fine turkey, as it really was, and equal in delicacy and richness of flavor to the famous English bird; as to its being superior, was a different question.

Our domestic turkey, if in fair condition and well prepared, makes a dish good enough for anybody; they are universally sought after in their season, from November to March, and now, about the holidays, (1852-53) are selling readily at from one to three dollars each, according to size and quality. This price, we should think, would make them as profitable, if not a little more so, than any other of the poultry-yard to breed and rear. Within a week or ten days 3,000 fine looking turkies were driven through Mercer, Pennsylvania, quite a small district of country, *en route* for a point on the Erie canal, intended for the New-York market. Here is a case to show that our Pennsylvania farmers and friends think them a profitable class of poultry to raise and fatten for our markets. This perhaps, too, is only a part of what this little district accomplished in the turkey trade this season; they might, and no doubt did send some elsewhere. The State at large, at this rate, would, one would suppose, supply our markets on

the seaboard to overflowing with turkies. It is not the case though, they are still in great demand, and would be, probably, if there were five times as many mouths enough for all, and at good paying prices; such is the rapid increase of our country in population. Large cities and towns in the interior, as well as on the seaboard, must all be supplied, and no doubt are, as every family must and will have their roast turkey at certain seasons. Among others, those who raise them must and do consume their share, and that fully, as none deserve it more and can better afford it. Our own State, New-York, and many others, no doubt, raise and send large numbers to our markets every year, in proportion to their size and population, of perhaps nearly or quite as many as Pennsylvania. We have no statistics or data to found a calculation upon of the numbers raised in other quarters, but from what we have heard and seen in travelling in different directions, we know that most of our farmers, large and small, raise more or less turkies every year, but many of them not in numbers that they ought, and would be to their interest to raise. Those possessing large farms turn their attention mostly to the grains, grasses, and fattening of cattle, and make poultry merely incidental to these branches, considering it rather a small, troublesome business. Profit is the great object in all occupations, and if fruit, garden vegetables, poultry, &c., used to be thought a small concern in the Atlantic states, should now, from various causes, be the most profitable, they lose the character of smallness and become great, and should be pursued to a much greater extent than heretofore. This must and will be the case in time, and our farmers, like every other class of community, will most of them adapt and shape their farming operations to meet this change and new state of things.

The turkey is said to be a proud, vain, silly bird, we suppose because he struts, gobbles, and shows his feathers, when excited or provoked by the strong passions of love, pride or anger. Most others of our brute animals do the same; that noble one, the horse, takes pride at times in showing his fine figure by capering prancing and neighing, not only to attract notice and admiration from his fellows, but from man. The human species, endowed with reason, sometimes evince the same weakness, if it may be so

termed, in a desire to show their taste by the cut, style, costly and showy ornaments of their dresses, on public and other occasions. Even men called by some the lords of creation, are vain of their feathers or shining, outward apparel, and take pride in displaying them. Some of these can do little more than strut, gobble, and show their feathers; whereas, if they would exert themselves a little to *shine* in intellect, they would receive more sincere smiles of approbation from the opposite sex, whose notice they are ambitious of attracting, than they do. Many of our ladies can readily and correctly discriminate the really useful from the merely ornamental, and are sure to bestow their rewards accordingly. Mental accomplishments, too, will be remembered longer; they make the deepest impression, they do not wear out in a day, but last for years and sometimes ages.

Selection of the Turkeys for breed. The largest and best looking should be preserved for the purpose; the male especially should be stately and erect in his movements—not go with his head drooping—it shows a want of spirits and perhaps of health. The soft fleshy excrescences called caruncle, about the head and neck, should be full and prominent, and of a red color. The appendage that hangs over the bill, long and thick, tapering as it descends to the end; the pectoral appendage consisting of long hairs, hanging from the breast, should be of a good length, and dark in color; these are usually not very thick. The color of the turkey is important; this should be dark bronze; as little white or light specks about it as possible; this is the natural color of the bird; it descends to him from his ancestors centuries ago; it is the most hardy and healthy for him. A turkey much speckled, or pure white, is not so hardy as the dark ones; it denotes weakness, and those who are experienced in rearing them, say they are not so strong generally as the dark, black ones; nor will they endure as much hardship. Hens—these should also be the largest of their class, plump and animated, possessing a bright eye, dark colored. Those with white feathers, are generally considered inferior. The hen breeds when a year old, or the spring succeeding that in which she was hatched. She is not in her prime until two or three years old, and will continue in vigor for three or four years after. Whether it is proper for the owner

to change his store stock for breeding purposes every two or three years, must be left to his discretion and experience ; one male at least should be kept for every dozen hens.

Laying Season. This commences usually about the middle of March ; the hen shows this by a peculiar uneasiness, and occasional cry, and strutting with an air of self-satisfaction, and prying into bye and out of the way places, evidently in search of a fit place to deposit her egg. At this time, the hen requires a little care and watching, to keep her about the shelter or barns and stables of the homestead, in preparing in corners and out of the way places, under cover, with a little dry straw and leaves, to induce her to occupy one of these for laying. Leaves have their influence, although the idea may be laughed at. It is one of the hundred habits descended to her from her wild ancestors ; these had only leaves, perhaps a little dry grass, to make their nest of. Some extra feed at this time, might be good, given near the places of the prepared nests ; all will help to keep her at home, and prevent her from going out to find a suitable place herself for her nest. It is generally in the morning she lays ; some every day, others every other day. When she is off the nest, it is perhaps best to remove them, except one, and keep them in some cool, dry place in the house ; this will secure them from vermin of the neighborhood, until the number is complete, which is generally from twelve to eighteen, then restore them to her. The best feed for them at this time, and it is thought all times, is any of the grains, ground or not. Indian meal is very fine, mixed with a little water. The wild animal is very fond of indian corn, no stimulating feed ; oats and hemp seed are rather of this sort. During the whole time of laying, the male must be carefully kept from the hen, at least when she is on her nest laying, otherwise if he finds her there, he will ill treat her, drive her away, and break her eggs ; also, a habit of the wild breed, but a bad one.

Imitation, or Setting and Hatching. The turkey is an intense setter, and shows great care and anxiety about her coming progeny ; none of the feathered race more, and some not as much so. The egg is a delicate substance, easily injured or broken, and de

stroyed; hence the constant watching, covering and guarding them from external injury. Water and some light feed should be kept near her, or where she can have easy access to it; she will defend her eggs courageously against assaults at this period. Her time of setting is from twenty-eight to thirty days. A few hours after the chicks show themselves, they should have a little nourishing feed thrown or put near the hen and nest; they will soon begin to pick at it, from her example. After they have all left the nest, they should be kept under shelter for a few days. Nothing the young turkey is more afraid of, and more hostile to his constitution and habits, than wet, caused by rain or dews; grass in this state, is very pernicious to them. They should be kept under shelter for some days after they come; this is often in spring, in March or April, when the rains are cold; let them go out sunny and pleasant days, but sheltered at night at this season. Feed should be regularly given them, not much at a time, but often, and of the most nourishing sort. Indian meal mixed with sweet milk boiled is best; wheat flour, with the bran, barley, &c.; no stimulating food or drink, like a pepper corn; a little alcohol in gin or brandy for the turkey chicks to strengthen them. Some mothers are weak enough, (rarely though we hope and pray,) to give their infants a little of these for some purpose, equally destructive no doubt to both. Aconite is sometimes given to grown persons when very ill and weak, in very small quantities, to give strength, not less poisonous though, if they contract love for it from habit. Eggs boiled pretty hard and cut up, mixed with onions, shalots, &c., are nourishing and healthy for the chicks; they will improve fast in strength and size on these and similar things; boiling concentrates an egg, and brings its rich ingredients closer together, and the little things will swallow more nourishment with less bulk. The albumen, or white of an egg, is very nutritious; it contains among other valuable materials, which form its compound, gluten, oxygen, hydrogen, and azote; it abounds in bones, muscle, membranes, &c., and is one of the most important and common of all the animal substances. The grains are most of them good for the chicks, some better than others. Wheat flour mixed with the bran, and a little milk; wheat contains more gluten than any other grain; the

bran also contains considerable of it. Buckwheat and barley are all good, properly managed. Scraps of meat from the table, cut up with the fat of mutton, veal, &c.

Indian corn, the turkies love better in any stage of growth, and seem to do better on it, than any of the breadstuff grains; this love for it has descended to them from their earliest progenitors, this has for ages grown wild in the forests of America, or cultivated by the Indians, and both the corn and the turkey, no doubt, natives of this continent. The corn could at all seasons, when it was fit, be approached by the turkies and consumed without any hindrance; this, with its nutritious qualities and fine flavor, no doubt, made these wild birds, ages ago, so attached to it, and that same love of it has been transmitted to their degenerate descendants of the present day. The best way perhaps, or one of the best ways to regenerate these last to a certain extent, would be to give them a little corn meal, boiled in sweet milk, two or three days after they left the shell, and go on increasing it a little, as they gain size and strength. Our people differ considerably in managing young turkies when they first come, as they do in many other things; all we can do, is to give advice according to our own views and the best of sources of information, derived from books and practical men.

Rearing, Keeping and Fattening. After the young turkies get nearly or quite half grown, they begin, under the guardianship of the old one, to work a little for themselves, in the way of procuring food; they frequent the fields and grounds adjoining the house, eat grass, buds and seeds of young early plants; begin to catch insects, worms, bugs, &c., and with adroitness. Until the season gets a little advanced, though, they should be kept about the homestead as much as possible, induced to roost near it; this can be effected by a little feed, thrown to them every evening when they come home. After they get more than half grown, they will begin their rambles farther from the house, and continue them the season through; it is in vain to try to check them in this, nor would it be right to do it; it is one of the habits inherent in them; their health as well as sustenance requires it. In this they are of use to the owner, in picking up a good deal

of their own food, in destroying insects, and in numbers and some of the worst kind when they abound, such as grubs, beetles, grasshoppers, &c. We saw the fine effects of this, on a few farms we visited in July, two or three years ago, in the interior. In one neighborhood, swarms of grasshoppers were laying waste almost every thing green. One farmer told us he had common fowls, in tolerable numbers, and but few turkies, but these would seem to make much head against the enemy. This gentleman told us, he had a friend living without the line of march of the invading foe, who had a large flock of turkies; he had seen the efficiency of his own, few as they were; he borrowed them, brought them home, and put them on his place, in a few days he was comparatively clear of the grasshoppers; they saved his corn and second growth of grass, besides other plants. He told us, his common poultry kept about the yards and gardens near his house, but the turkies scoured the fields at a distance, and appeared to find and face the enemy in every nook and corner of his premises, and devour him. To talk of destroying mischievous insects entirely, is idle; no man who knows any thing of their character, ever pretended it could be done; all we can effect is, to lessen their number, and thereby mitigate the evil. Turkies should be induced, if possible, to come home every night the season through, to roost on trees or other pretty high objects near the house; this will instil into them the habit, and prepare them for late in autumn and winter. In nut and corn time they will frequent the woods, in quest of one or two of their favorite feeds; indulge them, the season is short, it will put new life in them; will make them almost think of ages back, when all around was a wilderness, and these fruits abounded, and could be fed upon nearly without stint or molestation. Some farmers think poultry of all kinds are troublesome and expensive, and especially turkies; they will not pay; they roam at seasons all over the farm and neighbourhood, tread down and devour the grain and grass. Most animals do this more or less; even cattle sometimes break inclosures and injure grain badly, and at all times trample down and eat grass; common fowls and other poultry do the same, only about the house though. Does this more domestic poultry travel over the farm and destroy myriads of insects in every part of it,

pick up the grains scattered in gathering, and not only live but get almost fat by their industrious rambles? These too, not being so much at home, do not infest gardens, yards, &c., as much as others, and they are more sought after, and will bring more in market. Turkeys, after running at large till late in autumn, must be fattened or prepared for market, except such as are to be wintered or kept for store. We think the best way is to confine them in pretty large pens, with fences rather high, and also high perches for them to roost on, higher than other poultry; they require it; it is one of their hereditary habits.

Turkeys are voracious feeders, give them plenty of feed and they will fatten quick—all kinds of grain are good for them, especially indian corn, barley, buck-wheat ground or unground, feed should be changed often and the shape of it, given as meal or flour, moistened with water or skim milk, scraps of the house, dry crumbs of bread, bits of meat, all mixed up and made fine, and stirred up together with the flour and meal. Certain fruits are good, sweet apples, pears, nuts &c.; these for a change, both healthy and fattening: the small fruits are good early in the season both for young and old turkeys, strawberries, blackberries, whortleberries &c. Some people in Europe, perhaps some in our own country, *cram* their turkeys in the season of fattening them, with a delicate machine made for the purpose, and this after they have eaten all they would voluntarily. We should doubt the profit of this system. We think it unnatural, it is a forced process, and the food, after the crop is thus stuffed against the will of the animal, cannot prepare its various secretions in the stomach, and that part which goes to make flesh and fat assimilates to the body healthily and naturally. A few years ago, we met with a French gentleman who appeared to be conversant with this system of *cramming*, as he called it. In a certain district in France, they reared the turkey altogether, fattened and prepared them for the Parisian market. They did this almost exclusively on hickory nuts, raised for the purpose, large, thin shells, and full of rich meat. After the turkeys had eaten as much of these as they would, they crammed them every day with the nuts. This was done, he said, not only to make them very fat, but to fatten them very quick, and thereby save expense, as there was no feed

the bird was so fond of. He had seen turkeys there often, that weighed from 20 to 30lbs. They were known throughout Paris, sought after and bought with avidity. Notwithstanding this, if correct, it is here thought the fat and flesh of the turkey cannot be so healthy and fine flavored, as when he eats what he chooses at a time, and appetite and digestion go on regular as nature prompts. There is a book lately published, called "*Brown's Poultry Yard*," an excellent work, written by an Eastern gentleman, and where all keepers of poultry would find some good hints, and probably new ideas and suggestions, as to the best mode of keeping, rearing and fattening poultry of all kinds, and especially the turkey.

We can truly say, that nothing would give us greater pleasure, than to be the means of putting our readers, or even some of them, in channels which would be sure to lead them to the best information on our subject, and who would be stimulated thereby to help increase the numbers, and improve the qualities of one of our most valuable and beautiful American birds.

ADDRESS

Delivered at the Castle Garden, on opening the 25th
Annual Fair of the American Institute.

By the Hon. HENRY MINGS.

Ladies and Gentlemen—At the request of the Managers of the 25th Annual Fair of the Institute, I will endeavor to speak for them what I know to be their views and feelings in reference to the establishment and illustrious progress of our beloved country in all the useful and delightful arts; for, as our State organized the Institute to promote, by all honest and honorable ways and means, agriculture; yes, fellow citizens! that grandest art of all, on which all else depend as their foundation, strength, comfort, and most pleasing in the sight of God—that comes first—next commerce! that rapid, cheap, fair communication and exchange can be made by the farmer with the maker of the plow, and the maker of the club axe, the greatest work of art for such a world of forests as when we first landed on this great continent shaded it from the light of the sun. Here were presented jobs for Hercules! American genius and strong arms, and the vision of a future Republic animated their souls and untiring arms. The huge woods once browsed on by herds of mammoths, and whose mazes marked out by their enormous feet, made roads for the red men; these were all to be opened to the light of heaven, to prepare the way for the white faces coming from the east; or, as the Indians said, they rise with the sun out of the eastern ocean. All this work depended on the club-axe. We, of modern times, have forgotten, and most of us never saw the poor axe of all antiquity; it was called the pole-axe. Its head was thin, and its blade long and narrow; its aim very unsteady, and its blow light. Our Yankee axe did more work in a day than the pole-axe could in a week. This, and thousands of other ingenious and novel in-

ventions, rapidly placed the lands in order for culture; hewed timber down for houses, and barns and fences. Before this advanced guard of the Republic, all the obstacles have nearly disappeared. The red man will soon be with the mammoths, and the few wolves that remain clear out at once and forever, when they hear the shrill, frightful scream of the locomotive steam whistles. And already have the republicans made some 20,000 miles of railroads, so that no vermin in our broad land but hears with consternation its terrible unearthly voice, and prepares to quit with all celerity, and breed no more. The Institute was organized, too, to promote manufactures; and behold here some of the results, in the glittering instruments of labor, and their wonderful products of every description. The human race never before had such noble ones, not only dignifying hard labor by giving to it a most beautiful arm in appearance, but of the best form and make ever known. Such scythes as those in yonder case would have been selected as imperial swords by the old emperors.

Such cloths of cotton as we now make, never, since the deluge, have been made, for evenness of thread and excellence of weaving, not for any price whatever; such cotton cloths as we now buy by the thousand acres, if you will, for six cents a yard, a cloth worth more than the old, ten for one. Well, fellow-citizens! to speak these great truths about American progress is easy to one who feels deeply as we do its grandeur. We had once a *father*, as he said, and now a *rival*, as we all know. It is a hard fought game that is still playing between John Bull and us, and a much harder one was fought and won by our fathers over him. After all, I like him; competition is the life of business. He works like a bull-dog for perseverance, but he is too short in the legs to keep up with us; and he sees that already, and his great sheet, the Times, is now telling him much about it.

You are all young, compared with myself, and are in full vigor. Go on—you will never be beaten in the cause to which you devote yourselves. God has given you a mighty inheritance; go on and fill up the destiny! You and John Bull must shake hands. He says his people beat their drums all around a great

circle of the earth—your drums will roll louder than his. Go on, the work is honest, is honorable; your heads and hands were formed to invent, to judge, to decide, and to labor. Under the great command of God, let there be “action, action, action,” with perpetual reference to his will; do it for the good of your brother, and to the glory of the Almighty.

Among many important new things you see in this exhibition, one will probably be eminent. The royal premium of \$3,000, placed in the treasury of the American Institute by Mr. Ray, has brought here numerous inventions for safety and comfort in railroad travel. There is strong hope that by their means the hazard of that delightful mode of travelling will be reduced to zero, while the comfort will rise to the *Indian summer*.

And you will not fail to remember your hall of American fruits. I have never seen so large and so excellent a collection. I could not help whispering a question in the ear of her servant, Peter B. Mead, whether *Pomona* herself had not been with us on this occasion for once.

Add on to my life another lease as long, and I shall see, (unless there shall be among us sin enough to turn the will of the Almighty against us,) such a kingdom as no human imagination has ever conceived, or can now conceive. Strain your eyes to the future, as Ross & Craig do through their huge telescopes on unformed matter, on the nebula of unfathomable distance; you cannot make it out; but you are bound by every tie that binds you to God, to yourself, to wife, children, and fellow-citizens, to work it all out, the very best way you can. And the hour will come in which you will look back with rapture to your own action in such a glorious scene; one which will embrace about eight Chinass, of a thousand miles square each, and all filled with schools for temporal knowledge, and a temple to God for every thousand souls—or, look at it—*some two millions of christian churches!*

ADDRESS

Of the Hon. James Dixon, of Hartford, Ct., delivered
before the American Institute, Oct. 21, 1852.

AMERICAN INDUSTRY.

Mr. President and Gentlemen of the Institute—Permit me, sir, to congratulate you personally, on the prosperous condition in which you to-day find the institution, founded a quarter of a century ago, by yourself and your fellow laborers in the cause of American industry. From small beginnings, it has grown, under your auspices, to be truly *national* in its influence and in its magnitude, and you may now have the pleasure of beholding throughout our country, exhibitions of a similar character, of which yours was the forerunner and the parent.

To you, gentlemen, I beg leave also to offer my cordial congratulations, that on this twenty-fifth anniversary of your existence, your chair is again occupied and honored by the distinguished president of the American Institute.

The prominent idea which impresses the mind of the spectator of your exhibition, is the wonderful advance of our country in the industrial arts. The skill, the enterprise, the invention of a great nation, competent to create within itself all that necessity may demand or luxury desire, have arrested the gratified attention of thousands. The triumphs of art, the wonders of science, prove that while our territorial boundaries have been extended by conquest, the heart of the nation is at the same time alive with a prosperous and healthy growth.

I desire for a single moment to turn your thoughts from the contemplation of this display of the successful industry and ingenuity of a powerful and advancing people, to an occasion which presented a far different impression of our national greatness, and

particularly of the relative power and importance of this commercial emporium.

On the 21st day of October, 1775, seventy-seven years ago this day, during the second session of the fourteenth Parliament of Great Britain, a debate arose in the House of Lords on the subject of the measures proposed in the King's speech, relating to the American colonies. The Journal of the House of Lords informs us, in lofty and royal phrase, that "His Majesty being seated on the throne, adorned with his crown and regal ornaments, and attended by his officers of state, (the Lords being in their robes,) commanded the Usher of the Black Rod to let the Commons know it was His Majesty's pleasure they attend him immediately in this House; who being come with their Speaker, His Majesty was pleased to say, that the *present situation of America* had determined him to call them thus early together." In the debate which followed, scarcely a doubt was suggested by a single noble Lord, that the rebellious colonies would be speedily reduced to unconditional submission; but an apology was made for the course pursued by the Province of New-York, to which I desire to call your attention, as a striking illustration of the vast and almost inconceivable change which has since taken place, in the relative importance of the State and city in which we are now assembled. A distinguished member of the House of Lords, Earl Gower, rose and said, "that the Administration had been deceived and misled, and that consequently the measures taken were by no means proportioned to the nature and extent of the service; that the accounts received from the southern colonies had led to this mistake, and that several other events had happened which it was impossible to foresee or prevent. In particular," he said, "*the Province of New-York had been overawed, and compelled by a party of insurgents from Connecticut into measures they would never otherwise have adopted.*"

Such, gentlemen, was the relative position of New-York and Connecticut seventy-seven years ago, in the opinion of a well-informed British statesman. The change which has since taken place fills the mind with astonishment. What was then a provincial town, has become a great commercial emporium. Her

ships explore every clime, and outvail those of the "Mistress of the Seas," in her own waters, under the very eyes of a successor of the monarch to whom I have referred. The Province of New-York, now the Empire State of our confederacy, was then a wilderness; and the great city which now stretches in beauty and in strength, its giant proportions on every side, could then be overawed by a *band of insurgents from Connecticut!*

This great change furnishes abundant food for thought. It has not been confined to this city and State, but our whole country feels to its remotest bounds the impulse of advancing civilization and wealth. What has caused the vast relative change which is so forcibly illustrated by the scene which I have recalled to your recollection? What has felled our forests, settled our prairies, constructed our canals and railroads, and enabled the old States to furnish a population for the new, without being themselves depopulated? What has made New-York one of the wonders of the world, and built cities in our Western wilds larger than New-York was at the commencement of the century? and from what source must we expect continued growth and prosperity? To a few considerations suggested by these inquiries, I propose to invite your attention.

The political independence of this country, not yet declared at the period to which I have alluded, of course tended greatly to our national progress; but, gentlemen, there was another kind of independence, resulting from this, which has been equally effective, so far as it has existed, in stimulating our growth. I allude to our independence, as yet only partial and incomplete, in all that the diversified employments of labor, here, on our own soil, can do, in Manufactures and all the industrial pursuits, and in the successful commerce created thereby, to supply the wants of our own people. To secure this, was a leading cause, and not the least valuable end of our Revolutionary struggle.

The subject, then, to which I shall invite your attention, is *The importance of independence in all the industrial pursuits, in advancing the growth and sustaining the prosperity of this Nation.* I feel certain that I need not apologise to you, gentlemen, for the

selection of such a subject. The purposes of your Institution, as declared in your charter, authorise its choice, and free me from the suspicion of attempting to pervert this occasion to a partisan use. You are incorporated "for the purpose of encouraging and promoting domestic industry, in this State, and in the United States, in Agriculture, Manufactures, and the Arts, and any improvement made therein." Such is the language of your charter. An attempt to enforce the importance of national independence in the great objects for the promotion of which you exist, cannot be inappropriate to this occasion.

In examining this subject, permit me briefly to review the early condition of this country in respect to the Industrial Arts.

The immediate cause of our Revolutionary struggle was undoubtedly the right of taxation claimed by the British Government; but there were even then far-seeing men who felt that we had more serious grievances. The Stamp Act and the tax on tea were not the greatest evils to which our colonial condition exposed us. Dependence in manufactures and in commerce was evidently a far more important consequence of that condition, and to hold us in subjection in those respects was the great object of the British Government. This was avowed by Dr. Johnson, in his celebrated tract entitled "*Taxation no Tyranny*," written in 1775, at the request of the Government, in reply to the Resolutions and Address of the American Congress. He argued that the ascendancy of British commerce with America could only be retained by keeping the Colonies in subjection. "That our commerce with America is profitable," he says, "however less than ostentatious or deceitful estimates have made it, and that it is our interest to preserve it, has never been denied, but surely it will most effectually be preserved by being always kept in our own power; concessions may promote it for a moment, but superiority only can insure its continuance." In the same remarkable production, after showing conclusively, as he supposes, that the result of the quarrel with the Colonies will be conquest and continued supremacy, he indulges in a pleasant and ironical supposition, that the English Government may possibly be checked in their career of conquest, and reduced to peace upon equal terms, or

driven," as he adds, "from the Western Continent, and forbidden to violate a second time the happy borders of the land of liberty." "The time," he sneeringly continues, "is now perhaps at hand which Sir Thomas Browne predicted, between jest and earnest—

"When America shall no more send out her treasure,
But spend it at home in American pleasure."

"If," he adds, with a sarcastic irony, the point of which has been turned by the result in a direction, quite different from that intended, "we are allowed upon our defeat to stipulate conditions, I hope the treaty of Boston will permit us to import into the confederated Cantons such products as they do not raise, and such manufactures as they do not make, and cannot buy cheaper from other nations."

It is thus evident that in 1775, the great point of advantage to be gained by subjecting the Colonies was supremacy in commerce and manufactures. In the preceding year, 1774, an act had been passed which bore the following significant title, "An act to prevent the exportation to foreign parts, of utensils made use of in the Cotton, Linen, Woolen and Silk manufactories of this Kingdom," in which it was provided that after the first day of July, 1774, only two years before our Declaration of Independence, no such utensils should be exported to the Colonies, under penalty of a forfeiture of the utensils and the sum of £200 sterling. Even Lord Chatham, though a firm friend of the Colonies, supported the bill, and declared he "would not willingly permit the manufacture of a *hob-nail* among them."

The war soon commenced. During its continuance, the great want of the army was clothing. Manufactures were in so feeble a condition, though we had a population of nearly three millions, that it was extremely difficult to supply the wants of the troops in this respect, and their sufferings in consequence were extreme. Yet the commercial non-intercourse, occasioned by the war, furnished a degree of protection under which manufactures might have been expected to spring up. But a great obstacle was found to exist in the want of utensils, occasioned in part by the act of Parliament to which I have alluded. The manufactures aimed at in this act were exactly those in which we were deficient.

It is difficult for us, now, to realize the comparatively helpless and destitute condition of the country, at the period of the Declaration of Independence, in respect to manufactures and the mechanic arts; we presented the spectacle of a dependent people, cut off from our sources of supply. A multitude of human hands were ready to labor for the supply of the wants of the country; but the skill, the capital, the utensils, were wanting. And yet, while the war continued, there was, as there always is under such circumstances, an artificial prosperity, founded upon the absolute necessity of the country's supplying its own wants. A state of war has always been found to stimulate the energies of a nation, by driving it to the use of its own internal resources, and compelling it to employ its own labor. This explains the apparently anomalous fact that our country has enjoyed greater prosperity under circumstances seemingly adverse, than under those most favorable. Hence, during the Revolutionary war, real estate rose in value, our industry was protected by the existing relations of the country, agriculture flourished, and our condition, notwithstanding the necessarily low state of our manufactures, was better at the close of the war than at its commencement.

The condition of the country after the restoration of peace—when the peculiar causes of prosperity, just alluded to, had ceased to act—led such strong-hearted, clear-headed men as Washington to fear that we had won our independence in vain. We were suddenly deluged with British goods; the manufactures, which had come into existence by the protection afforded by the war, were at once destroyed; our specie was exhausted; real estate fell so low as to ruin all who had bought land upon credit; agricultural products were without a market, and universal distress pervaded the country. This state of things led to the formation of our Federal Constitution. Under the old confederation, as is well known, Congress had no power to afford protection to our labor. Some of the States attempted to levy duties on foreign goods, but their laws were defeated by the refusal of other States to concur in their provisions. While Massachusetts and Connecticut were willing to unite for this purpose, Rhode Island persisted in making Newport a free port of entry, whereby the commercial business of that city was greatly increased, at the expense of

Boston and other neighboring ports. To remedy the evil, the good people of Massachusetts, and Connecticut, seriously proposed to make a partition of Rhode Island, and annex it to their respective territories—a mode of enforcing “law and order,” to which the citizens of that spirited and patriotic State would not very readily have submitted. The revenue laws of New-York and Pennsylvania were also rendered unavailing, by the refusal of New-Jersey to adopt similar legislation. Perth Amboy was made a free port, and at one time had an extensive commerce, and was likely to become a powerful rival to New-York. These collisions between the States resulted in the abandonment of all attempts to protect American labor under the confederation. The advantage which would be likely to result to their own manufactures, did not escape the attention of the British statesmen of that day. Lord Sheffield, in his “Remarks upon the Commerce of the United States,” exposes the wishes and policy of the British Government, on this subject, as follows:

“It is certain that the confusion of the American States can now only hurt themselves. They must pay Europe in the best manner they can for clothing, and many articles for which they are not likely to have the credit they had while in more settled circumstances. If one or more States should prohibit the manufacture of any particular country, they will find their way to them, through other States, by various means. The difficulty will only raise the price on the consumers in the State where the articles are prohibited. The British manufactures found their way into every part of the country during a most rancorous war, and the most strenuous American manufacturers admit, that no impost or excise law will, for a long time, be regarded in America. In the meantime, Britain will have nothing to apprehend. The United States will hardly enter into real hostilities with Britain. Britain need not quarrel with them at all; but should either happen, *some stout frigates*, cruising between Halifax and Bermuda, and between the latter and the Bahamas, would completely command the commerce of this mighty continent.”

These agreeable anticipations of his Lordship were not more sadly disappointed by the adoption of the Federal Constitution, than by our naval victories in the last war with Great Britain.

The state of things which existed at the time of which I speak, could not long be endured. The present Constitution was at length formed, and one of the first acts of the first Congress of the United States, which assembled under its provisions, expressly asserted the principle of levying duties for the protection of American Industry. It was intended, as was declared in its preamble, "*to provide revenue for the support of the Government, the payment of the debts of the United States, and for the encouragement of American manufactures.*"

It was on the 4th day of July, 1789, that this law was enacted; a law which was in itself a Declaration of Independence, scarcely less important in its influence upon the industry of the Nation, than that which had been published to the world thirteen years before, by the patriots of the Revolution. It was signed by GEORGE WASHINGTON, President of the United States, who had himself been a member of the Convention which framed the Constitution. The following members of Congress, who voted for the bill, were also members of the same Convention, viz: James Madison, Oliver Ellsworth, Roger Sherman, William Samuel Johnson, Caleb Strong, Elbridge Gerry, Nicholas Gilman, John Langdon, William Patterson, Thomas Fitzsimons, Robert Morris, Richard Bassett, George Read, Abraham Baldwin, and William Fell. These men certainly were capable of judging whether the Constitution they had just framed, empowered them to pass such an act, and their decision, as a cotemporaneous exposition of the Constitution, is certainly entitled to great weight.

The protection afforded to manufactures by this act proved insufficient. During the war in which all Europe was so long involved, we became the carriers of the world, and on the whole we enjoyed an unexpected degree of prosperity. Congress at different times raised the rate of duties so as to afford some slight degree of protection; but the impression seems generally to have prevailed, that we were not prepared to become a manufacturing people. In 1789, '91, and '97, small additional duties were laid. In 1800 an increase of $2\frac{1}{2}$ per cent. was made, and again in 1804, an addition of $2\frac{1}{2}$ per cent. to the *ad valorem* duties then existing,

for the purpose of raising what was called the "Mediterranean Fund," which was set apart for carrying on the war with Tripoli. This duty ceased in 1808.

At the commencement of our second war with England, our manufactures were found to be in an extremely low condition. The war gave them protection, and they flourished of necessity during its continuance. At its close, another influx of foreign goods deluged the country, and thousands were irretrievably ruined. The distresses of that day are within the memory of many now living. Although the return of peace had been greeted throughout the Union with every manifestation of joy, the revulsions which followed caused an amount of suffering which the horrors of war had failed to produce. In the first six months after the cessation of hostilities, woolen goods, of the value of \$17,000,000, were thrown into the United States. The whole amount of importation for the fiscal year ending September 30, 1815, although the war continued during the first quarter of that year, reached the sum of \$113,000,000, while the exports of the same year were but \$52,000,000. This immense balance against us, of course, occasioned great commercial distress. In a speech in the British parliament, Lord Brougham—then Mr. Brougham—after remarking upon the excessive amount of exportation to this country, occasioned by the peace of 1814, adds, "that it is well worth while to incur a loss upon the first importation, in order, by the glut, to stifle in the cradle those rising manufactures in America, which the war had forced into existence contrary to the natural course of things."

This remarkable language exposes the past and present policy of the British manufacturers and British Government with respect to the industry of this country. Independence, on our part, in manufactures and the arts, is considered by them "*contrary to the natural course of things.*"

With the hope of relieving in some degree the distress which then existed, the tariff of 1816 was enacted. It is a remarkable fact that Southern statesmen were then the strongest advocates

of protection. Mr. Calhoun himself delivered a speech in support of the protective system, which has never been surpassed in ability; and the arguments by which he sustained his opinions, all the powers of his own mighty intellect, matured by time, and strengthened by application and exercise, were never able to refute.

I have thus glanced at the early history of our legislation on this subject, before it had most unfortunately become a party question. Up to the period to which I have traced the history of protection, and even later, men of every shade of political opinion had agreed on this subject; and it is a little remarkable that the only President from Washington to Jackson, who did not call the attention of Congress to the necessity of protecting American manufactures, was John Adams. He is known, however, to have been in favor of National Independence in this as well as in all other respects.

But it was not by legislation alone, that the founders of our Republic attempted to secure and complete our independence in manufactures and the mechanic arts. They went further, and abstained from the use of foreign fabrics. General Washington was inaugurated in a suit of American broadcloth, made in Hartford, in the first woolen factory established in the United States. Mr. Jefferson and Mr. Madison were so deeply impressed with the importance of sustaining our independence in manufactures, that they wore at one period of their lives American cloth exclusively. Mr. Jefferson expressed his sentiments on this subject as follows: "The grand inquiry now is, shall we make our own comforts, or go without them at the will of a foreign nation? He, therefore, who is against domestic manufactures, must be for reducing us either to dependence on that foreign nation, or to be clothed in skins, and to live like wild beasts in dens and caverns. I am proud to say," he continues, "I am not one of them. Experience has taught me that manufactures are now as necessary to our independence as to our comfort; and if those who are of a different opinion will keep pace with me in purchasing nothing foreign, when an equivalent of domestic fabric can be obtained, without any regard to difference of price, it will not be our fault

if we do not have a supply at home equal to our demand, and wrest that weapon of distress from the hand which has so long wantonly violated it."

With such heartfelt earnestness did the author of our Declaration of Political Independence, express his sentiments on this subject. He had then (1816) witnessed the effect of two wars; he had watched the growth of the country, and knew the causes of its prosperity and adversity. He had lived to see great and astonishing changes in the population and extent of our Union, but died before the miraculous improvements and inventions, which signalize our day, were discovered and brought to perfection. During his administration, a New-England turnpike road, scarcely forty miles in length, was thought worthy of being made the subject of a special report to the general government, by Alexander Wolcott. He describes it in glowing terms, and says, "he may venture to predict, without incurring the risk of being considered visionary, that the time is not far remote when the whole distance between New-York and Boston can be traversed on a turnpike road. This is all," he adds, "that can ever be expected."

Mr. Jefferson was, in his time, called a dreamer; but in no vision of his wildest dream did he foresee the wonderful advance which this day witnesses in the industrial independence of our nation.

Such, then were the opinions, and such the practice of the wise and liberal statesmen, who laid the foundations of our Republic. With them only one sentiment prevailed with regard to the importance of manufactures and the mechanic arts, in administering to the wants of social and domestic life, and in promoting the glory and prosperity of our nation. They felt that our independence was incomplete while our wants were supplied by the labor of a foreign country, and that the cause to sustain which they had pledged their lives, their fortunes, and their sacred honor, was not yet fully triumphant.

The age in which we live has been signalized by an event which teaches us that nations are now struggling in the field of labor, for

the mastery which they once contested on the field of battle. The great Industrial Exhibition of 1851 was a monument and a proof of the dignity of labor. Crusades, tournaments, military exhibitions, have had their day; labor now claims and receives the homage of the world. But it is labor trained to scientific perfection, and educated to perform its difficult and wonderful task with consummate excellence. One result of the Exhibition was, that the nation which most cultivated science and art in any particular branch of manufactures, was so far in the ascendant.

The first step then, towards industrial independence, is to ennoble labor by educating it.

He is a blind and inattentive observer who does not perceive that in this age of the world, the competition of labor is, as Dr. Playfair has lately declared it, "a competition of intellect. From the earliest times, useful labor has been held most in esteem by the most intellectual and cultivated nations. The name of the first artificer in brass and iron, was deemed worthy of being recorded in Holy Writ. The son of Jupiter is represented by the Greek poets, toiling at the anvil, and forging the shield of Hercules. Among rude and untaught nations labor was divorced from intellect. But gradually knowledge and inventive genius came to be more and more mingled with its efforts; and now that all the powers, all the faculties of the human mind are devoted to the supply of human wants, labor, to reach the highest excellence in its productions, must be in some degree skilled in the scientific principles involved in the industrial arts. Hence it is, that the governments of those nations of Europe which most excel in the products of human ingenuity, have adopted it as a principle of state, that industry must be supported by a competition of intellect; while in many of them schools of labor and industrial universities abound, in which the sciences connected with manufactures are taught.

The surplus fund of the great London Exhibition, amounting to upwards of £150,000 sterling, has been devoted by Prince Albert and the Royal Commissioners, to the establishment of a great central institution of arts and manufactures. The institution is to contain laboratories and workshops, a museum and library. Lec-

tures will be delivered on the sciences connected with the different branches of manufactures, and well informed and skilful workmen will superintend the chemical operations in the laboratory, and the mechanical labors of the workshop. Practical men are no longer influenced by the contempt of abstract science which formerly prevailed among them. They begin to see, with Dr. Playfair, that "practice and science must now join together in solemn union." Liebig has told them that "from the schools in which natural sciences are taught, a more vigorous generation of artisans will come forth, through whom the resources, the wealth, and the strength of empires will be incalculably increased." Humboldt, too, has testified that "those nations which remain behind in manufacturing activity, by neglecting the practical application of the mechanical arts and of industrial chemistry to the transmission, growth or manufacture of raw material, must inevitably fall from any prosperity they may have attained; and this while those states in which science and the arts of industry lend each other mutual assistance are seen pressing forward in the race." When this comes to be generally felt, labor will be ennobled, and placed in its true position.

What would be the character of a nation whose artisans were skilled in the principles of science, involved in the products of human ingenuity, displayed in your exhibitions? These have added vastly to the wealth of the country; but the argument in favor of independence in manufactures, drawn from their pecuniary profit to a people, is by no means the most important. The question should be, not how shall we make *money*, but how shall we make *men*? Not by the wealth of a nation alone, can its greatness be measured, but by the character of its inhabitants. A complete and perfect manhood, strong in its capacity, well trained, self-reliant, more abundant in performance than in promise; this is the need of our nation. How shall this be attained? How better than by training up the artisans of this new world to an acquaintance with the scientific principles which lie at the foundation of their arts? Is this impossible? Not if it be true that the highest excellence cannot be otherwise reached. By some means this highest excellence will be reached. The day of mediocrity is over. Your annual exhibition, the great London

Exhibition of 1851, and the Crystal Palace for the exhibition of the industry of all nations, now approaching its completion in this city, are compelling labor to satisfy itself no longer with partial merit. The hand that can fabricate what the public taste now demands, must be guided and governed by a brain capable of mastering the mysteries of the science on which its art is founded. The quick eye, the ready hand, the dextrous touch, will then lighten and facilitate labor, and relieve it of somewhat of its irksomeness.

Give us a true and complete national independence, instead of looking to foreign nations for the most beautiful, finished, and perfect products of human labor, and you shall see the best, most fruitful and most cultivated minds, seeking employment in those industrial arts which enrich and adorn our country. Have you not already noticed that the young men who annually leave our colleges, are less and less inclined to flock into the so-called learned professions? Have you not observed that they are more disposed than formerly to become architects, engineers, artists, inventors, hand-workers, as well as head-workers? Give them but the field of labor; cease to look abroad for the luxuries which prosperity has converted into necessities; give to American labor the privilege of doing American work, and you shall have a race of artisans, skillful, educated, scientific; competent not only to build your cities, discover your inventions, adorn your temples and palaces, but also to understand the policy and advise the measures of your government; able alike to defend your institutions from the assaults of the foreign invader, and the arts of the domestic demagogue.

Thus is taken the first step towards the elevation of labor. Another is to increase its compensation. Mankind have a habit of graduating the rank of labor by the recompense it receives. How shall this be increased?

The tendency of national independence in manufactures and the mechanic arts is to place the laborer on the vantage ground, and enable him, to a reasonable extent, to make his own terms. The rate of wages, like every thing else for which a price is paid,

depends on the demand and supply. Increase then the demand for labor. Multiply and diversify employments—build factories—construct machinery—manufacture every thing which the circumstances in which you are placed will permit—pursue every branch of the mechanic arts—bring forth the mineral wealth which lies dead and useless in your mountains—diversify your agricultural pursuits, and thus you create a demand for labor. You change the relative position of the employer and the employed. Competition is in favor of labor, not against it. Its pecuniary return is consequently increased, and reaches the highest point which the profitable employment of capital will permit. Foreign productions give place to those of our own industry. The immense competition existing between employers, created by national independence, in the industrial arts, causes the demand for labor which I have described. But let us reverse the picture. Admit a deluge of foreign goods—perhaps the refuse of the European market. Our own manufacturing establishments suspend or greatly curtail their operations. The building connected with manufacturing ceases; machinery is no longer in demand; the mechanic arts languish; our iron slumbers in undisturbed repose in its ancient resting-place; the unemployed labor of other avocations is concentrated upon agriculture, which becomes the principal employment, and, as an inevitable consequence, the rate of wages sinks to its lowest level. The laborer no longer stands on the vantage ground he before occupied, but instead of making his own terms, finds his labor brought to a glutted market, and is obliged to submit to the great law which lessens the price as the supply is increased.

Another effect of the independence of which I am speaking, will be to improve, mentally and physically, the entire mass of the people. The great aim of the present age is the improvement of the individual man. It is *thus* that humanity is to be advanced. Formerly the *Man* was nothing—the *State* was every thing: France was great and glorious in the splendid reign of Louis XIV.; but a Frenchman was utterly insignificant. All that is now changed. To raise, to instruct, to qualify for usefulness each individual of the race—this is the end now to be reached. To give manhood to man is better than to extend our limits on the

map of the world. The first step towards this is to give him employment. Idleness is our worst foe. Burton tells us, in his *Anatomy of Melancholy*, "Idleness is for the wise;" but there are very few in our day wise enough to bear idleness. Without labor, there can be no manly strength in any community. It was to insure the results that would follow from labor, that the earth was made to bring forth thorns and briers spontaneously, while the food of man must be extorted by ceaseless industry from its unwilling soil. The primeval curse has thus become one of our richest blessings. Shall labor be confined to one occupation, or shall it choose from many?

Consider the difference between a people devoted to one pursuit, and a community skilled in a diversity of employments. In the pastoral state every man is a shepherd; in the savage, a hunter. Ignorant of every thing but their own employment, a nation confined to one occupation is only one step from total ignorance. What interchange can here be of ideas? How can knowledge be imparted from one to another? But let employment be diversified, and now a commerce of ideas commences. New thoughts, though rare as comets, may then be elicited, and give birth to new things. And so we find in all history, that any nation devoted to a limited range of pursuits, has been weak, dependent, spiritless. The universal voice of mankind has decided agriculture to be the noblest, as it is the most necessary of employments. But what could be more unwise than for a whole people to be devoted to this pursuit? Admit, if you please, that in a pecuniary point of view, this might be for some nations the most profitable occupation. Suppose that the soil of this entire Union were adapted to the growth of cotton, and that by no other business could so much money be realized by the nation, as by the growth of this staple for the supply of the world. What would be the result of the abandonment of every other leading occupation, and the devotion of all the energies of our people to this? Instead of the strength of mind and body which we now witness, we should behold a weak, narrow-minded, and unskilled race. There would be no action and reaction—no collision of ideas—no emulation—no improvement on old modes—no scientific advance; but the minds of men would stagnate like a motionless

untroubled pool, and the movement of the race would be backward. The same might be said of any other single employment to which a nation may be confined. Ignorance, prejudice, bigotry, must be the inevitable result; and if this be the effect of a single occupation, proportionally it is produced as the range of avocation is narrowed. As in the human body there are innumerable functions—digestion, assimilation, secretion, respiration, circulation, accretion—so in the body politic, should all the innumerable occupations be performed by which the wants of men are supplied. A State with but one employment is like a body with but one function in healthy operation, and all its other powers paralyzed. With every added branch of industry, you restore the use of a power, until at last, when within our own borders human industry exerts its strength and exhausts its ingenuity in every occupation which the wants of the highest civilization can demand, we have a healthy, full-grown and fully developed State. Then is presented a field for the growth of the human intellect—a school in which may be trained and moulded, and educated, not operatives, but *Men*. How vastly this view of the subject swells in importance beyond its mere economic aspect. What if more money might be brought into a Commonwealth, to be hoarded by the few, if all would buy where they can buy cheapest, and every occupation but one were abandoned? I by no means believe such would be the case, but I grant it for the moment. Is a population skilled in the industrial arts, inventive, self-dependent, and competent fully to supply its own wants, of no value? Would you improve the condition of your State by inducing the busy artisans, whose skilful and intelligent labor has built up the beautiful cities and villages, which every where greet the traveller's eye, to abandon their various occupations, and betake themselves to one pursuit? They are educated, in the literal sense of the word—*educō*—having something latent in their nature drawn out, instead of knowledge poured in; and in the exercise of their inventive faculties, and in the conscious strength of a being whose well-trained powers are at command, and whose cunning hand can skilfully execute what the reasoning head conceives, they become full-grown, well-developed *Men*. Such are the citizens who, in future years, must defend the freedom and uphold the honor of our nation.

And here, I think, we see the error of those who have looked at this subject merely from the economic point of view. Adam Smith began by treating on "the Nature and the Causes of the Wealth of Nations," and he proved to the satisfaction of many, looking at the question merely in the money light, that it is the interest of every people to buy where they can buy cheapest, with certain modifications of the doctrine in the cases in which its application interfered with British supremacy in manufactures. He made it the great business of mankind to drive good bargains, regardless of every thing but present cheapness of the commodity purchased. If clothing could be bought for less money in Paris than in New York, every citizen of New York, according to this view, should buy of the Frenchman—otherwise New York loses the difference in the price, and is by so much impoverished. Many are convinced by this reasoning. They say it is unanswerable, that it is evidently the interest of every man to buy where he can buy cheapest—that any system which interferes with this, is oppressive and unnatural, and results in a dead loss to the country.

I desire for the purpose of the argument, for a single moment, to concede all this. Grant that a nation of men, who buy in a foreign, because the cheapest market, do in the outset procure the greatest possible amount of commodities for their money, and are enriched to that extent. It follows, then, that every article which can be obtained cheaper abroad should be there purchased. The theory applies as well to agricultural products as to manufactured articles. If, by any possibility, wheat could be brought here cheaper from the Baltic than from Illinois, it would be for our interest to eat foreign bread, and leave the wild flowers to wave over the western prairies. It is impossible by any reasoning to distinguish the products of the earth from the manufactured articles, which our pecuniary interests as a Nation should lead us to buy where we can buy cheapest, if this be the true doctrine.

Let us suppose this system adopted to its full extent. Picture to yourselves a nation acting upon this theory. The employment of their industry of every description depending upon the ques-

tion whether they can produce as *cheaply* as other countries, their energies would decline—their intellects would dwindle—their aspirations would sink—their sentiments would become groveling, and their souls would waste in torpid slumber, like the dull weed on Lethe's oblivious banks. Where would be the wealth of such a people? Not in gold and silver does the real "wealth of nations" consist. It is in the muscles, and the brains, and the hearts of men. With these developed to their full power, no people can be poor; without them, none can be rich. The wealth of our own country consists not in its mines of gold; its banks; its debts due from one citizen to another; nor yet entirely in what its labor has already wrought; its cities, its palaces, its churches and railroads, and human dwellings filled with all that ingenuity can devise for the comfort of man; not in these. Sweep all these from existence, and leave the energy, the fortitude, the power to conceive, and the skill to execute; and more than all, the lofty and poetic sentiments which exalt, ennoble and purify our race, and you leave the true wealth of the Nation untouched. A few years would restore all.

What value, then, has the wealth of a nation which stagnates in the platitude of a few limited employments—such wealth as that which corroded in the coffers of Spain, when the ores of Mexico and Peru were exhausted to freight her galleons? Grant Adam Smith and his followers all they claim, and yet when they have shown how the *Wealth* of Nations may be increased, they have not touched that greatest question, the *Weal* of Nations. Wealth, in this sense, and weal or welfare, are totally different things. They leave out of view the noble and lofty sentiments which are inspired by a feeling of national independence—the ideas elicited by a collision of minds occupied in diversified employments—the useful fiction created by various, perhaps jarring interests, by which the thoughts of men are heated to action, and made to germinate and expand and bear fruit. All this is nothing to them, but the sole question is, Where can you make the best bargains? Where can you clothe yourself with the least gold? How vain and empty seems such an enquiry at this day, when mankind are every where becoming inspired with the great idea, that the weal of the human soul, with its heavenly aspira-

tions, and its eternal hopes, and unspeakably glorious destiny, is immeasurably more important than mere material wealth.

Yet even the accumulation of national wealth is now found to follow with rapid steps upon the path of a people, whose energies and capacities are trained to all the employments by which their wants can be supplied. Only for a brief time, if at all, even if we take the narrow economic view of the subject, does experience show that a nation's wealth is increased by buying in the foreign, because it is the cheapest market. A people whose capacities are sharpened and developed by the labor and the skill necessary to produce every thing required by its wants, and whose sentiments are elevated and enobled by the consciousness of National Independence, cannot fail to increase in wealth. Such a people will cover the land they inhabit with churches, and schools, and commodious dwellings, which shall be the homes of education and refinement. How shall you make such a people? This should be your great question, gentlemen, not how shall you buy your cloth and iron in the cheapest market. The money aspect of this question is the least important. I believe that even in that aspect it is far better for our country to depend on its own labor for the supply of its own chief wants. But I do not desire to dwell on that view. Political economists may prove if they please that our hope of industrial independence can only be realized at a pecuniary loss. I believe the contrary—but what if it were true? The common practice of mankind shows that higher considerations than the question of mere pecuniary profit govern their conduct. How many things are we constantly doing to elevate and enoble humanity, at an *apparent* pecuniary loss? Our schools are supported by a dead outlay: our churches declare no semi-annual dividends; our parks and fountains are not solid investments; our rational amusements, and our public festivals, and fairs, and exhibitions, and monuments, and sailing yachts that beat John Bull, and steamships that beat the world, are all mere "*fancies*." Yet they repay to the nation a richer dividend than the most fortunate *placer* in golden California—they repay it in cultivated intellects, and religious sentiments, and happy hearts,

and healthy constitutions, and noble memories of departed patriots, and a proud consciousness of national superiority!

And here permit me to remark that this feeling of national superiority is no slight benefit to be derived from the independence, the advantages of which I am attempting to illustrate. Time, which has extended our boundaries to the far Pacific, and built up countless villages and cities through all our vast domain, and made this great city what it has now become, has at last given us a history. We have a past. We have memories to be cherished, as well as hopes to cheer. We can look back upon a national existence, whose origin is more marvellous than the fabulous mazes, in which ancient historians loved to involve the birth and infancy of their own nations. We were cradled in war, and the warlike spirit, which is perhaps inseparable from a people possessing what we have inherited and acquired, has more than once found a fitting field for its display. Our history thus far has been a struggle for national superiority: this struggle will not soon cease; but I trust it may become a fraternal, bloodless strife for ascendancy in the arts of peace. Whatever cherishes and justifies a sense of national superiority, cannot but elevate a people and impart to every man a consciousness that he constitutes a part of the State. Noble and elevated sentiments like this cannot dwell alone in the human heart. They expel base thoughts and low propensities, and give birth to ideas akin to themselves. As our country is increasing in population, and expanding in territorial extent, what can tend more to insure that high tone of public morals by which our Republic must be preserved? A people qualified for self-government is the highest type of manhood. An individual who can govern himself has reached a high point of moral culture—much more a people. Such a people should feel deeply the grandeur of the duty, and be pervaded with a high sense of national honor. They should feel what our country is—her position among the nations of the earth—her duties, her responsibilities, and her capacities--and how grand and important the part she is to play on the great stage of human experience for centuries to come. Already our flag waves over every sea, and commands respect for itself and for every American citizen.

We are so near the point of national superiority, that it seems to some already reached. Soon, very soon—for what is the space of thirty, or fifty, or one hundred years, in the life of a people? we shall be the most powerful nation on the globe, the umpire of all disputes, the arbiter of all fates. Let, then, this sense of national greatness be cultivated and based on a foundation nobler and safer than preëminence in war—a superiority in all that can exalt the labor of the human hand.

It is important to remark that by reason of our vast extent of territory, industrial independence is possible to our nation. Every clime, every soil may yield us every product. We have cotton and sugar at the South; water power and inventive skill at the North; wheat at the West; iron and coal in the centre; rivers on the far Pacific slope, like those in Eastern Europe, described by Strabo, “whose wintry torrents roll down golden sands;” and men everywhere capable of developing all our natural advantages. Such is the country we inhabit. Is it, then, a visionary hope that a people dwelling in such a land, may produce within their own borders, all that the highest civilization may require for the supply of human wants? With every function of human industry in healthy operation—every production of art, every invention of genius brought here to the highest perfection, our Nation would be a truly independent and self-sustaining Commonwealth, a complete and perfect body politic. War might rage on every side; leagued assailants might attack us on every quarter; but the grand and perfect machinery of our national affairs would move on undisturbed, and our people would pursue their daily occupations unterrified and unharmed, in the consciousness of safety and power.

Not that every possible branch of human industry should be pursued in every State. There is a limit to the diversification of human pursuits. We would not attempt to raise oranges in New England, and make ice by artificial means in Florida. Nature has given us the true law on this subject, and I apprehend it is this: Every nation should make for itself everything which can be produced by the same amount of human labor as elsewhere. When more labor is required to produce a given article

in this country than in another, then, and only then, nature forbids the employment, and to force it would be unwise: To raise tropical fruits here, costs more labor than in the torrid zone; but iron and coal can be extracted from our mountains, and broad-cloths and carpets can be woven upon our looms, with the same expenditure of labor and skill which are required in Wales or Belgium. If the money cost is more here, it can only be because labor demands a higher reward; and that such is the case is matter, not of regret, but of exultation. Labor has wants here which are unknown elsewhere. It demands its hours of leisure; its comfortable and refining home; its means of mental cultivation; and, above all, ability to educate the children who, while the father bends in cheerful toil over the anvil or the bench, are laying the foundations of the learning which is preparing them to become your preachers, your authors, your inventors, your Senators, your Governors, and the Presidents of your Republic. Well, therefore, may we exult in the fact that labor demands a higher compensation here than elsewhere, as its wants are higher and more extended.

The law to which I have just alluded, viz., that nature forbids the productions which require a greater amount of labor here than elsewhere, provides for the pursuit of another great branch of human industry, *commerce*.

In a country like ours, *internal commerce* far transcends in importance that which is exclusively foreign. The sails of domestic commerce are hovering constantly on our coasts; our rivers and lakes are alive with unnumbered and nameless water craft; our railroads groan under the weight of richly-freighted cars, and all our millions of highways are worn smooth by the wheels of internal trade. All this, stimulated and sustained by the industrial independence which, to a certain extent is already ours, and which must grow to more perfect maturity with the growth of our nation, furnishes the means and the materials of that vast foreign commerce which is so important an element in our national greatness. As wealth, enterprise, and taste increase, human wants expand in more than equal measure. Climes far away over distant seas, lands breathed upon by softer gales, warmed by a brighter sun, and visited by stars which never beam

in our nightly skies, will be explored by adventurous feet, to adorn the beauty, and gratify the taste, and please the senses, not of a few favored children of wealth alone, but of the great masses of the people, whose diversified industry may diffuse universal competency. Thus would the wealth created by labor, occupied in every possible employment, react upon foreign commerce, until no wave should wash the remotest shores of the earth, but would bear up our richly-freighted fleets. Need I argue that the commerce sustained by such a people, would more enrich this mart of universal trade, than the comparatively barren and constantly diminishing business of carrying to an impoverished, spiritless, unemployed people, the few foreign necessities which they were unable to make for themselves, and which their poverty scarcely permitted them to buy? No greater mistake can be made than to suppose such a city as this, sitting enthroned as she does, like a commercial queen, between two great arms of the sea, can grow in wealth by cherishing foreign commerce at the *expense* of domestic industry. The ships which repose their huge proportions beside your docks, might rot and moulder there, but for the vast interior which they supply. The policy which enriches the artisans and laborers of our vast republic, whose commercial metropolis is here, is the policy which has made this city what it is, and will make it what it will become. Ever since the formation of our government, through every period of uncertainty and discouragement, sometimes aided, sometimes depressed by legislation, the genius of our people has aspired to industrial independence. It has been in a measure acquired; and to this so far as it exists, is much of our prosperity to be attributed. It is now by no means perfect. There is yet human labor unemployed, whose earnings might swell the demand for the merchandize which fills the warehouses of commerce. Exhaustless beds of iron still lie dead and useless in our mountains, where a kind Providence has stored it away for the use of our people; yet we are dependent for this great staple on a nation, whose far lighter yoke of taxation, our fathers could not brook three-quarters of a century ago, when this city was a village, and this State a wilderness. Which would most enrich this city and her commercial sisters, Philadelphia, Boston, and Baltimore—to supply the wants of the labor which should forge our own iron, or to carry

in a few ships the dead weight of so many tons from Liverpool or Bristol? Which would most inspire and reward commerce?

There is, then, no antagonism between Home Industry and Commerce. On the contrary, a healthy, legitimate, and increasing commerce is the result of a full development of all the industrial pursuits. The abounding trade of this city has not been caused more by its favorable position, than by the prosperous state of the vast region whose business seeks this great centre, as the rivers seek the ocean. The industry of the entire Union has been tributary to this favored island—has built its streets of palaces, and laden the ships which float at its docks. Not without reason, therefore, does the heart of the whole Nation rejoice in every exhibition of the naval superiority of this Metropolis. When her vessels outsail those of England, it is an *American* triumph; and when one of her Merchant Princes dispatches a fleet to penetrate the frost-bound regions of the Frigid Zone, and through the wintry night, on which for months no morning breaks, while the true heart of the hopeful English wife accompanies the stars in their unceasing vigils, to search amid polar ice and eternal snows, with superhuman endurance, for the long-lost British Admiral and his imprisoned ships, it is *American* benevolence which wakes the plaudits of the world.

If I have not dwelt on that other great branch of American industry, to promote, which is one of the objects of your existence, it is not because I am insensible of its importance. Agriculture lies at the foundation of our national wealth and prosperity. Like commerce, it is necessarily protected and stimulated by our peculiar geographical position, and like that it is best promoted and rewarded by encouraging the greatest possible diversity of human employments in our midst. All the great pursuits of American Industry have thus, when properly viewed, the same interests, and share in the advantages which are diffused through the Nation by a true and perfect industrial independence. They revolve not in jarring and discordant spheres, but move on harmoniously, suffering and prospering together, under the policy which injures or benefits each. The legislation which protects and stimulates the labor of the Nation, does not confine its bene-

fits to one branch of industry ; and he is no friend of our Republic who would sever the links which connect by identity of interest her manufactures, her agriculture, and her commerce, as our confederated States are bound together, in eternal union, by the golden chain of mutual advantage.

But it is time that these remarks were drawn to a close.

The Fairs of the American Institute, for twenty-five successive years, have marked the annual progress of our national industry. While the eye has been gratified, and the mind instructed, by the present Exhibition, one part of it, and that the most beautiful of all—the display of flowers and fruits—has sadly reminded us of the absence of one who, in former years, bore a prominent part in your anniversary festivals. The Genius of beauty and taste mourns the untimely loss of her devoted and favored admirer. A thousand homes, whose growing attractions have been called into existence by his creative skill, are saddened by the reflection that his eyes are closed in death. He entered upon the active labors of life at the time when we were beginning to learn that utility and ornament are not incompatible. To him, more perhaps than to any other man, we are indebted for the advance which has lately been made in public and domestic improvement, and for the growing love of the beautiful in nature which is every where manifested ; and to us who cherish ardent aspirations for national independence in all that relates to the wants and pursuits of our people, it is not the least of his claims to gratitude that he taught us to love and cherish the flowers of our own valleys and hillsides, and to prefer the noble trees of our own forests to the rarest exotics. His heart was truly American, and his cherished purpose, which seemed to require for its completion more than the recorded term of human life was to develop the capacities and enhance the beauties of his native land. The architecture which most truly reveals a nation's taste, and speaks to the popular heart through the affections—the architecture of home—has received from his hands an impression of beauty which it can never lose. On every side we see the effects of his labors. Cottages, whose simple yet elegant adornings teach how truly taste may be independent of wealth ; windows

tempting the eye from loveliness within to the glorious prospect without ; stately trees that seem to guard like sentinels the sacred precincts of home ; village churches, whose very spires and walls speak of religion to the heart—these, with the designs uncompleted at his death, which may yet cheer the desert that surrounds our National Capitol, and all the unnumbered charms which his inspired genius has scattered over our land, will long preserve the memory of DOWNING, fresh and fragrant as his own flowers, in the hearts of thousands, whose taste has been gratified and cultivated by his instructions.

CATALOGUE

Of Books on Agriculture now in the Library of the American Institute.

Agricultor, The; folio, New-York.

Agriculture Francaise, par MM. les Inspecteurs d'Agriculture; 3 vols., 8vo, Paris, 1843.

Aiken, J., Letters on Gardening, &c.; 8vo, Philadelphia, 1794.

Allen, Lewis F., Rural Architecture, Farm Houses, Cottages and Out buildings; 12mo, New-York, 1852.

Allen, Lewis F., Farm Houses, Cottages and Out-buildings; 8vo, New-York, 1852.

Allen, R. L., Domestic Animals; 12mo, New-York, 1848.

American Agriculturist, A. B. and R. L. Allen, editors; 10 vols., 8vo, New-York, 1843 to 1852.

American Husbandry; 2 vols., 8vo, London, 1775.

Annales des Haras et de l'Agriculture; 3 vols., 8vo, Paris, 1845-1847.

Annales de la Societ   Royale d'Horticulture de Paris; 6 vols., 8vo, Paris, 1841-1846.

Annals of Horticulture and Year Book of Information on Practical Gardening; 8vo, London, 1846.

Armstrong, John, Treatise on Agriculture; 12mo, New-York, 1845.

Bailey, A. M., Implements of Husbandry; folio, London, 1782.

Balfour, J. H., Class Book of Botany; 8vo, Edinburgh, 1852.

Barlow, Joel, The Hasty Pudding, and an Essay on Corn, by D. J. Browne; 12mo, New-York, 1847.

Barry, P., The Fruit Garden; 12mo, New-York, 1851.

Berneaud, Thiebaut de, The Vine-dressers' Manual; 8vo, New-York, 1829.

Bischoff, James, History of the Sheep; 2 vols., London, 1842.

- Blacklock, Ambrose, Treatise on Sheep ; 18mo, New-York, 1841.
- Blake, Rev. J. L., The Farmers' Every-day Book ; 8vo, Auburn, 1850.
- Boitard, M., Manuel Complet de l'Amateur des Roses ; 18mo, Paris, 1836.
- Boitard, M., Manuel des Instruments d'Agriculture et de Jardinage ; 8vo, Paris, 1836.
- Bon Jardinier Almanach ; 12mo, Paris, 1851.
- Bridgeman, Thomas, Young Gardners' Assistant ; 8vo, New-York, 1845.
- Brooks, S. H., Country Architecture ; folio, London, 1847.
- Browne, D. J., Trees of America ; 8vo, New-York, 1846.
- Browne, D. J., American Poultry Yard ; 12mo, New-York, 1850.
- Buel, Jesse, The Farmers' Companion ; 12mo, Boston, 1840.
- Buist, Robert, American Flower Garden Directory ; 8vo, Philadelphia, 1839.
- Busby, James, Principal Vineyards of Spain and France ; 8vo, Philadelphia, 1838.
- Butler, Frederick, The Farmers' Manual ; 12mo, Weathersfield, 1821.
- Canfield, H. J., Breeds, Management, &c., of Sheep ; 12mo, Salem 1848.
- Catalogue of Fruits, Ornamental Trees, &c. ; 8vo, Flushing, 1844.
- Chaptal, J. A., Chemistry applied to Agriculture ; 12mo, Boston, 1835.
- Child, D. L., Culture of the Beet and the Manufacture of Beet Sugar ; 12mo, Boston, 1840.
- Cobb, J. H., Manual of the Mulberry Tree ; 12mo, Boston, 1833.
- Colman, Henry, European Agriculture ; 2 vols., 8vo, Boston, 1846-1848.
- Colman, Henry, Fourth Report of the Agriculture of Massachusetts ; 8vo, Boston, 1841.
- Communications to the Board of Agriculture ; 7 vols., 4to, London, 1804-11.
- Country House, the Poultry Yard, Piggery, the Ox and the Dairy ; 12mo, London.
- Cultivator, The, conducted by Jesse Buel and Luther Tucker ; 9 vols., 8vo, Albany, 1834-1851.

- Curtis, William, *Practical Observations on the British Grasses, &c.*; 8vo, London, 1805.
- Darwin, Erasmus, *Botanic Garden*; 2 vols., 8vo, London, 1799.
- Darwin, Erasmus, *Phytologia, or the Philosophy of Agriculture and Gardening*; 8vo, Dublin, 1800.
- Davies, David, *Labourers in Husbandry*, 8vo, Dublin, 1796.
- Davis, N. S., *Text Book of Agriculture*, 12mo, New-York, 1848.
- Davy, Sir Humphrey, *Elements of Agricultural Chemistry*; 8vo, Glasgow, 1814.
- De la Fond, O., *Traité de l'Electricité*; 12mo, Paris, 1776.
- Dickson, A., *Husbandry of Ancients*; 2 vols., 8vo, Edinburgh, 1788.
- Dickson & Co., *Catalogue of Plants*, 8vo., Edinburgh, 1792.
- Donaldson, John, *Treatise on Manures and British Grasses*; 8vo, London, 1816.
- Downing, A. J., *Landscape Gardening*; 8vo, New-York, 1846.
- Downing, A. J., *Architecture of Country Houses*; 8vo, New-York, 1851.
- Downing, A. J., *Cottage Residences*, 8vo, New-York, 1843.
- Downing, A. J., *Fruits and Fruit Trees of America*; 8vo, New-York, 1847.
- Doyle, Martin, *Cyclopedia of Husbandry*; 8vo, London, 1814.
- Doyle, Martin, *Flower Garden*, 12mo, New-York, 1835.
- Drake, Daniel, *Cincinnati and the Miami Country*; 12mo, Cincinnati, 1815.
- Drummond, Henry, *Condition of the Agricultural Classes of Great Britain and Ireland*; 2 vols., 8vo, London, 1843.
- Dufour, J. J., *American Vine Dressing Guide*, 12mo, Cincinnati, 1826.
- Duhamel, M., *A Practical Treatise on Husbandry*; 4to, London, 1762.
- Ellsworth, H. W., *Valley of the Upper Wabash*; 12mo., New-York, 1838.
- Farmers' Cabinet*; 4 vols., 8vo, Philadelphia, 1836-1840.
- Farmers' Dictionary or Cyclopedia of Agriculture*; 2 vols., 8vo, Edinburgh, 1850.
- Farmers' Dictionary or Cyclopedia of Agriculture*; edited by the Rev. John M. Wilson, 2 vols., 8vo, London.

- Farmers' Friend or a Record of Recent Discoveries, &c.; 8vo, London, 1847.
- Farmers' Library, Animal Economy; 2 vols., 8vo, London.
- Farmers' Magazine; 12 vols., 8vo, London, 1844, to the present time.
- Ferary, P., *Florum Cultura*; 4to, Rome, 1623.
- Fessenden, Thomas G., *Complete Farmer and Rural Economist*; 12mo, New-York, 1851.
- Fleet, Samuel, *Rural Library*; 8vo, New-York, 1838.
- Gardiner and *Practical Florist*; 3 vols., 8vo, London, 1843-44.
- Gardner, D. P., *The Farmers' Dictionary*; 8vo, New-York, 1846.
- Gasparin, Count de, *Course d'Agriculture*; 5 vols., 8vo, Paris, 1846-1849.
- Gera, Dr. Fo., *Fabrication du Fromage*; 8vo, Paris, 1843.
- Gill, Thomas, *Technical Repository*; 9 vols., 8vo, London, 1822-1826.
- Glenny, George, *Handbook of Practical Gardening*; 8vo, London, 1851.
- Harbury, William, *Complete Body of Planting and Gardening*; 2 vols., folio, London, 1770.
- Henderson, Andrew, *Practical Grazier*; 8vo, Edlinburgh, 1826.
- Henfrey, Arthur, *Vegetation of Europe*; 12mo, New-York, 1852.
- Hill, Isaac, *Farmers' Monthly Visitor*; vol. 3, fol., Concord, 1841.
- Hoffy, A. *Orchardists' Companion*; 4to, Philadelphia, 1811.
- Houel, Ephrem, *Traité complet de l'Elève du Cheval en Bretagne*; 8vo, Avranches, 1842.
- Honston, George, *Farmers' Sportmans', &c., Magazine*; 8vo, New-York, 1827.
- Hunker, James, *Scotch Swing Plough*; 8vo, Edinburgh, 1843.
- Jacquemin, Emile, *L'Allemagne, Agricole, Industrielle et Politique*; 8vo, Paris, 1842.
- Johnson, G. W., *Dictionary of Modern Gardening*; 12mo. London, 1844.
- Johnson, G. W., *The Gardener*; 3 vols., 18mo, London, 1849.
- Johnson, S. W., *Rural Economy*; 8vo, New Brunswick, 1806.
- Johnston, O. W., *The Farmer's Encyclopedia*; 8vo, Philadelphia, 1844.
- Johnston, James F. W., *Contributions to Scientific Agriculture*; 8vo, Edinburgh, 1849.

- Johnston, James F. W., *Lectures on Agricultural Chemistry and Geology* ; 12mo, New-York, 1842.
- Johnston, James F. W., *The same* ; 8vo, Edinburgh, 1847.
- Johnston, James F. W., *Lectures on the General Relations which Science bears to Practical Agriculture* ; 8vo, New-York, 1850.
- Johnston, James F. W., *Notes on North America* ; 2 vols., 8vo, Boston, 1851.
- Journal of Agriculture* ; 8vo, Edinburgh, 1849-51.
- Journal of the Royal Agricultural Society of England* ; 7vo ls., 8vo, London, 1840-47.
- Journal of Agriculture*, Edited by John S. Skinner ; 8vo, New York, 1848.
- Knight, Franklin, *Fac Similes of Washington's Letters to Sir John Sinclair on Agriculture* ; 4to, Washington, 1844.
- Knight, T. A., *Treatise on the Culture of the Apple and Pear, and on the Manufacture of Cider and Perry* ; 12mo, London, 1813.
- Lathrop, Leonard E., *The Farmer's Library* ; 12mo, Rochester, 1838.
- Lectures on Agricultural Chemistry and Geology* ; 12mo, New-York, 1842.
- Lectures on the Application of Chemistry and Geology to Agriculture* ; 12mo, New-York, 1842.
- Leuchars, Robert B., *Practical Treatise on Hot Houses* ; 8vo, Boston, 1851.
- Liebig, Justus, *Chemistry in its application to Agriculture, &c.* ; 8vo, London, 1843.
- Lindley, G. and J., *Guide to the Orchard and Fruit Gardens* ; 12mo, New-York, 1833.
- Lindley, John, *The Vegetable Kingdom* ; 8vo, London, 1846.
- Livingston, Robert R., *Essay on Sheep* ; 8vo, New-York, 1809.
- Low, David, *Domesticated Animals of the British Islands* ; 8vo, London, 1845.
- Low, David, *Elements of Practical Agriculture* ; 8vo, New-York, 1839.
- McMullen, Thomas, *Hand-Book of Wines* ; 12mo, New-York, 1852.

- Magazine of Horticulture, Conducted by C. M. and P. B. Hovey; 18 vols., 8vo, Boston, 1835 to the present time.
- Maison Rustique, du XIXe Siecle; 5 vols., 8vo, Paris, 1844-1845.
- Manning, Robert, Book of Fruits; 12mo, Salem, 1838.
- Marshall W., Treatise on Planting and Rural Ornament; 2 vols., 8vo, London, 1803.
- Marshall, W., Rural Economy of the Midland Counties; 2 vols., 8vo, London, 1796.
- Marshall, W., Rural Economy of Norfolk; 2 vols., 8vo, London, 1795.
- Marshall, W., Rural Economy of the Southern Counties; 2 vols., 8vo, London, 1798.
- Marshall, W., Rural Economy of Yorkshire; 2 vols., 8vo, London, 1796.
- Martinelli, Jules, Manuel d'Agriculture; 12mo, Bordeaux, 1846.
- Massachusetts Agricultural Repository and Journal; 9 vols., 8vo, Boston, 1801-1826.
- Memoires d'Agriculture, d'Economie Rurale et Domestique; 40 vols., 8vo, Paris, 1814-1846.
- Memoirs of the Pennsylvania Agricultural Society.
- Memoirs of the Board of Agriculture of New York; 2 vols., 8vo, Albany, 1821-1826.
- Memoirs of the Philadelphia Society for Promoting Agriculture; 5 vols., 8vo, Philadelphia, 1815-1826.
- Moll, L., Colonization et Agriculture de l'Algérie; 2 vols., 8vo, Paris, 1845.
- New-York Farmer and American Gardener's Magazine—New Series; Edited by D. K. Minor; 4to., New-York, 1833.
- New-York Farmer and Horticultural Repository, Edited by Samuel Fleet; 4 vols., 4to., New-York, 1828-1831.
- New-York Farmer and Mechanic: 7 vols., 8vo, New York, 1844 to the present time.
- Normandie Agricole, Journal d'Agriculture Pratique, d'Economie Rurale et d'Horticulture: 4 vols., 8vo, Caen, 1843-1847.
- Observations on Modern Gardening: 8vo, London, 1770.
- Odart, Comte, Ampélographie ou Traité des Cépages; 8vo, Paris, 1845.

- Perine, Henry, Tropical Plants; 8vo, Washington, 1838.
- Petzholdt, Alexander, Lectures to Farmers on Agricultural Chemistry; 12mo, London, 1844.
- Ditto, ditto, 8vo, New-York, 1846.
- Picard, l'Abbe, L'Agriculture Raisonnée; 12mo, Niort, 1844.
- Plough Boy, The, 3 vols., 4to, Albany, 1819-1822.
- Porter, George R., The Nature and Properties of Sugar Cane; 8vo, Philadelphia, 1831.
- Prince, Wm. R. & Wm. Pomological Manual, or a Treatise on Fruits; 8vo, New-York, 1833.
- Prince, Wm. R. & Wm., Treatise on the Vine; 8vo, New-York, 1833.
- Riggs, Robert, Experimental Researches; 8vo, London, 1844.
- Reich, G. O., Gartenkalender; 12mo, Nürnberg, 1798.
- Revue Horticole, Journal des Jardiniers et Amateurs; 8 vols., 12mo, Paris, continued to the present time.
- Ruffin, Edmund, The Farmer's Register; 10 vols., 8vo, Peterburgh, 1833-1842.
- Schllpf, S. A., Manuel Populaire d'Agriculture; 8vo, Strasbourg, 1844.
- Schwerz, J. N., Culture des Plants Fourragères; 8vo, Paris, 1840.
- Schwerz, J. N., Culture des Plantes et Grains Farineaux; 8vo, Paris, 1840.
- Schwerz, J. N., Preceptes d'Agriculture Pratique; 8vo, Paris, 1839.
- Sinclair, Sir John, Code of Agriculture; 8vo, Hartford, 1818.
- Skinner, John S., Journal of Agriculture; 8vo, New-York, 1846.
- Smith, Charles H. J., Parks and Pleasure Grounds; 8vo, London, 1852.
- Smith, Joseph A., The Farmer's Mine, 12mo, New-York, 1843.
- Smith, John, Treatise on Cucumbers and Melons, &c., 12mo, Ipswich, 1833.
- Spöhr, D. C. H., Veterinarisches Hand-Buch; 12mo, Nürnberg, 1798.
- Spooner, Alden, Cultivation of American Grape Vines and Making of Wine; 12mo, Brooklyn, 1846.
- Sproul, John, Elements of Practical Agriculture; 8vo, London, 1851.

- Spooner, W. C., *Veterinary Art*, 8vo, London, 1844.
- Stephens, George, *The Practical Irrigator* ; 8vo, Edinburgh, 1829.
- Stephens, Henry, *Book of the Farm* ; 8vo, New-York, 1847.
- Steuart, Sir Henry, *The Planters' Guide* ; 8vo., New-York, 1832.
- Stewart, John, *Stable Economy* ; 12mo, New-York, 1815.
- Stoltz, J. L., *Manuel Elementaire du Cultivateur Alsacien* ; 12mo, Strasbourg, 1842.
- Stud-Book Francals, *Registre des Chevaux, de Par Sang* ; 3 vols., 8vo, Paris, 1838-1843.
- Tinelle, Lewis, *Hints on the Cultivation of the Mulberry and the Production of Silk* ; 12mo, New-York, 1837.
- Transactions of the Highland Agricultural Society of Scotland ; 8vo, Edinburgh, 1813, to the present time.
- Transactions of the Michigan State Agricultural Society ; 10 vols., 8vo. Lansing, 1850.
- Transactions of the New-York State Agricultural Society ; 10 vols., 8vo, Albany, 1842-1851.
- Transactions of the Society for the Encouragement of Agriculture, &c. ; 55 vols., 8vo, London, 1789-1843.
- Travanet, M., *Preservatif d'Agromanie Empirique, ou Lettres Agricole* ; 8vo, Paris, 1845.
- Vasey, George, *Delineations of the Ox Tribe* ; 8vo, London, 1851.
- Varlo, C., *New System of Husbandry* ; vol. 2, 12mo, Philad., 1785.
- Veterinarian, The, *A Monthly Journal* ; 8vo, London, 1844, continued.
- Veterinary Record, The, 2 vols., 8vo, London, 1849, 1850.
- Volney, C. F., *Soil and Glimate of the United States*, 8vo. Phila., 1824.
- Waistell, Charles, *Designs for Architectural Buildings* ; 4to, London, 1827.
- Washington, George, *Letters on Agriculture* ; 4to, Washington, 1844.
- Ditto, ditto, Washington, 1847.
- Watson, Elkanah, *Agricultural Societies* ; 3vo, Albany, 1820.
- Weeks, John M., *Manual for Managing Bees* ; 18mo, Middleburg, 1836.
- Western Agriculturist and Practical Farmers' Guide ; 12mo, Cincinnati, 1830.

Whitmasch, Samuel, Culture of the Mulberry Tree and the Care of Silk Worms; 12mo, Northampton, 1839.

Wiggins, Francis S., The American Farmers' Instructor and Practical Agriculturist; 8vo, Philadelphia, 1840.

Working Farmer; edited by Prof. James J. Mapes, 4to, 1849, 1850, 1851.

Youatt, William, Every Man his own Cattle Doctor; 12mo, Phila., 1844.

Youatt, W., and W. C. L. Martin, Cattle; edited by Ambrose L. Stevens, 12mo, New-York, 1851.

Young, Arthur, Course of Experimental Agriculture; 4 vols., 8vo, Dublin, 1771.

PROCEEDINGS OF THE FARMERS' CLUB.

REPOSITORY OF THE AMERICAN INSTITUTE. }
351 Broadway, New-York. }

THE FARMERS' CLUB is an organization of the Institute under the direction and control of its Board of Agriculture; a meeting of which is held at the Repository on the first and third Tuesdays of each month, at 12 o'clock, M. Its meetings are open and free to all the members of the Institute and all other persons connected with the pursuit of Agriculture, or who may desire through its medium to diffuse information on the subject of cultivation.

The discussions at the Club are mainly confined to subjects belonging to general Agriculture, Horticulture, Floriculture, Pomology, and chemical developments pertaining to these pursuits. Written communications on any of these subjects are always thankfully received by the Agent of the Institute and laid before the Club. Gentlemen from all parts of the Union or from foreign countries are invited to attend. Translations from foreign Journals and other works are always acceptable and will be published.

The Farmers' Club of the American Institute was organized in 1843, and held its first meeting on the 22d of June in that year. The conversations and discussions at the Club are necessarily often desultory, as it is the object of the members of the Institute to diffuse useful information on the subjects of Agriculture, Commerce, Manufactures, and the Arts, among their fellow men.

A. C.

Farmers' Club, April 27th, 1852.

HENRY SWIFT, Esq., in the chair.

Present 24 members.

The Secretary said he was pleased to read extracts from the "Walks and Talks in England," a volume recently from the pen of Mr. Olmstead, of Staten Island :

GRASS IN ENGLAND.

From an American Farmer in England. Frederick Law Olmstead, of Staten Island. New-York, 1852.

"The commonest grass seed sown in England, what may be called the staple grass, is rye, or ray-grass, a perennial. It is much smaller, closer growing grass than our timothy. I think it has a sweeter taste, is probably, bulk for bulk, more nutritious, and perhaps so pound for pound; but I think more fat and muscle can be made from an acre if sowed with timothy than with rye-grass. A valuable quality of rye-grass is its early spring growth. A field of rye-grass will be up some inches, offering a tempting bite to cattle before a field of other grasses will show a green surface. I believe that it ripens earlier too than timothy, and is better for mowing ground on this account, to be sown with clover, which is injured by over-ripeness, if not cut till timothy is in its best state for hay. I have seen no timothy in England but I know it is sometimes sowed.

Rye-grass has stood at the head of the mowing grasses, in some parts of England, for centuries. In districts of light and dry soils, it is less in favor than elsewhere, but I judge becomes of more value with the improvement of husbandry generally. Marshall (1796) writing from Gloucestershire, speaks of the general strong prejudice of the farmers against rye-grass, which he calls his favorite grass:—"smothering everything and impoverishing the soil, until it will grow nothing," they say; and arguing against them, he makes an observation of value with reference to the question of quantity. "If *real* rye-grass has ever been tried alone and without success, it has probably risen from too great a quan-

tity having been sown. Be it rye-grass or rubbish, I understand seldom less than a sackful (three heaped bushels) an acre is thrown on, whereas *one gallon* an acre of clean winnowed real rye-grass seed is abundantly sufficient on such soil as the vale is covered with. The soil is a rich deep loam."

Clover (red and Dutch) is more sown here for hay, than with us, though it is much more difficult to make good hay of it in this climate. It is sowed in the spring as with us, perhaps twenty pounds to the acre. We commonly sow five to ten pounds. Arthur Young tried about a dozen experiments to ascertain the most profitable quantity of clover seed to sow, and concluded his report as follows: "The more seed, as far as 20 pounds per acre, undoubtedly the better." This is a plain fact, contradicted by no part of the experiments; and the great inferiority of five to seven pounds, shows equally clear that such a portion of seed is too small for an acre. Where land is well manured, less seed is required: $12\frac{1}{2}$ pounds seem the proper quantity on very rich, gravelly soil. A bushel of clover seed weighs sixty to sixty-four pounds. In ground intended for mowing but one or two years, biennial varieties of the rye-grass are sown, which are of stronger growth than the perennial. They are also sometimes sown with permanent grasses, giving on a deep rich soil, a heavier burthen of grass the first year of cutting than these would do. For this purpose I have thought it might be well to sow the biennial or sub-perennial rye-grass seed with timothy, which does not usually yield a fair crop at its first cutting, and have twice attempted to make trial of the Italian rye-grass, but in both cases the seeds failed of germination.

I saw one field of grass that had been mowed eight years, and had received a dressing of thirty hundred weight of bones—it promises fair yet to bear heavy swathes for some time to come.

The beet in England is said to yield the largest weight in roots and leaves, of any other root crop known. The climate of the United States, like that of France, is much better adapted to the beet and much less favorable to the *ruta бага* than that of England. The beet is much less liable to be injured by insects or

worms than the turnip or ruta бага—though I incline to think the latter is much more favoured with us than in England in this respect.

A rapid and early growth of beet is important—earthing them up is injurious—when the plants are two to three inches high, thin out to twelve inches apart. When two or three come up in a bunch, only one must be left—it will lie down flat at first but will soon recover. When the leaves early in the fall, begin to dry pull them off for the cows profitably. Those gentlemen who cottage farm it on a small amount of land, and want a small dairy, ought to cultivate the sugar and mangel-wurtzel beets for their cows.

WHITE CLOVER.

Cheese raisers prefer white clover to all other grasses for their purposes. The use of bone on pasture, they say, is to make a sweeter, stronger and more permanent pasture. After the bones had been put on the pasture twelve years, the good effect is still visible."

BOTANICAL LEARNING AS TO BEETS.

By H. MARGA.

The learned Dr. Lindley in his Vegetable Kingdom, calls the plants of which the beet is one, Chenopode. As weeds they inhabit all parts of the world, abounding most in extra-tropical regions. They are exceedingly common in all the northern parts of Europe and Asia, and are frequent inhabitants of salt marshes.

Some are used as potherbs—as spinach, English mercury. Garden orach (which is cultivated and used like spinach in some parts of Europe), and chard-beet; the roots of others form valuable articles of food, as beet and mangold-wurzel, plants now famous as a new source of sugar capable of being produced in Northern countries.

One of these plants, *chenopodium vulvaria* or *olidum*, has an atrocious odour, has a great reputation as an anti-spasmodic and emmenagogue (good for the menses.)

BOTANICAL LEARNING AS TO CARROTS, PARSNIPS, &c.

Dr. Lindley calls them *apiaceæ*. Umbellifers, the flower stems resemble the sticks of the umbrella. They are natives chiefly of the northern parts of the northern hemisphere, and inhabit groves, thickets, marshes and waste places. They are extremely rare in the tropics except at considerable elevation, where they gradually increase in number as the other parts of the vegetation acquire an extra-tropical or mountain character. Hence although they are hardly known in the plains of India, they abound on the mountains of the Himalaya—however they are not uncommon in the southern hemisphere.

Of the harmless kinds in which, with a little aroma, there is no considerable quantity of acrid humor or gum-resinous secretion, must be more particularly named celery, fennel, samphire, parsley and the roots of carrots, parsnips and skerrits, and several others. Among the gum-resinous species, those yielding *assafœtida* hold the first rank. The fœtid odor of these plants is supposed to be owing to sulphur, in combination with their peculiar essential oil. *Assafœtida* is the milky juice of various species of *ferula*, described by Kæmpfer in his work upon Japan. Burnes found *assafœtida* plants on the mountains of the Hindoo Koosh, where they are regarded as a highly nutritious food for sheep.

Some of these plants give very active purgatives. For their aromatic and carminative (expelling wind) power, the most celebrated are anise, dill, caraway and coriander, and many others. Of the poison in this family, are *conium* or hemlock, and several more.

Whortleberry is the fruit of *vaccinium uliginosum*. The fruit of it is said to be narcotic, and is sometimes put into beer or other liquor to make them heady—when fermented, it yields an intoxicating liquor.

When Hudson entered the north river, the Indians were found to be provided with dried whortleberries in considerable quantities.

H. MEIGS, *Secretary*.

Physiology of the Earth, by De Trarvanet, Paris, 1844. Presented to the American Institute, by Alexander Vattemare.

[Extracts translated by H. Mears.]

In the early ages of Rome, agriculture was considered as the *first and most liberal of the Arts*. The farmers stood at the head of society, and when one of them had established the cultivation of a new plant in Italy, he proudly added the name of it to his own, as victories take the names of the places where they were gained. The Fabius, Lentulus and Cicero, are surnames of the farmers famous for *beans, lentils and chick peas*. Seranus was the surname of him who invented the drill. Some say that Cicero is not entitled to the honor we give him, and declare that a wart like a chick pea on his nose, gave him the nick-name; my version of it is however true: In conformity with the agricultural fashion of that day, Rome flourished while her men were farmers and began to fall the moment slaves were employed. The agricultural generals of that day cultivated their field in exact lines and drills as armies were drilled; and the same order and discipline observed as when in front of the enemy, in order of battle.

As to France, the commentaries of Cæsar leaves us no doubt that at the same period, she was far better cultivated and far more fertile (for many ages,) than she ever was since. It was only about the end of the last century that mind began to turn to agriculture. It was Louis XVI, who first caused a herd of merino sheep to be introduced from Spain, and founded the celebrated sheepwalk Rambouillet.

Napoleon's aspiring genius conceived a vast plan of social reparation in the first place, and a flourishing agriculture, as fundamental necessities for the empire.

An agricultural conquest is less brilliant and less celebrated than a war victory—but the one passes away, is forgotten almost while the other becomes more grand and for ever increasing. In one age, Austerlitz and Wagram will hardly be remembered, while all Europe will continue to bless the hand which opened

sugar to its fields. The day is rapidly approaching when agriculture will be loved, worthily appreciated, and wisely and nobly practised. It will become an art greatly superior to all others, because it is not only a pleasure and a glory to man, but all mankind have their well-being by its means.

Agriculture considered as a mere mechanical action is one thing and the other is its chemical operation—for the Chemist is the farmer after all. The scientific study of the soil, to repair its losses, supply its wants for varieties of plants, &c. A true farmer may well be compared to the Physician, and his land to the Patient. He feels the pulse of his land, gives the requisite medicine, diet, rubbing, brushing, exercise, &c.”

WILD BERRIES.

Mr. Van Wyck.—Most kinds of the Whortleberry or as it is commonly called huckleberry, grows altogether wild in the United States on rough rocky ground, there are many varieties. The two kinds most in use and most abundant are the black huckleberry and the dark blue, the former are small, sweet and palatable, the latter are larger; they grow on higher bushes or stems, a little tart and more pleasant and more sought after than the others. Both are considered wholesome, nourishing and of a delightful flavor, especially to eat with sweet milk in hot weather in summer. The bushes they grow upon are some seasons loaded with them and they last a good while, often till near the middle of September. On some parts of Long Island, there are a good many, and they are to be found in greater or less quantity in most of our uncultivated grounds. Children can pick them faster and easier than grown persons. High dry lands are best suited for the kinds described; some of our mountains often abound with them. Many are brought to our markets, every season and readily bought at fair prices. There is a species called the Swamp or tall huckleberry, a stout shrub, growing from five to eight inches high, yielding many large berries one third of an inch in diameter, purplish black when ripe. It is said by some, these are fine for eating.

BEET.

The Beet is also before us for consideration to-day. The three principal kinds which are most used and cultivated not only here,

but in Europe are, first the long rooted which should be sown in a deep rich sandy loam. 2nd. The short or turnip rooted, for the growth of which, a shallower soil will do. 3rd. The green leaved red rooted, requiring a depth of soil equal to that of the long rooted; there are several varieties under each of these heads, which will not be of much use to notice. Besides these there are the white beet and the mangel-wurzel. The first has become celebrated throughout Europe and it may be said, the world, as the Sugar Beet, from this has been manufactured in France and some other countries, by their able chemists, sugars both brown and white of the best kind. This valuable vegetable was brought into use by Napoleon, in his long war with the English and others; he was shut out, from the tropical regions, which produce the cane, heretofore almost the only source of sugars in the greatest perfection and abundance. The genius of Napoleon triumphed over this difficulty, as it did many others, with the aid of science by the acute and learned chemists of France, sugar was manufactured from the Beet in quality equal and some think superior to any other, and in quantity sufficient to supply the greater part of Europe. Many nations of the continent continue to make and use it, to this day, to the great advantage of their agricultural and manufacturing industry. Our northern and middle States might use this beet (as they can and do grow it) in the same way, if they saw fit; perhaps the time may come when they may find it their interest to do it. Beet tops are good as a green, fine to eat as spinach or as winter salad, or as asparagus.

It is supposed to be a salt water plant, as it grows near the seashore, or when surrounded by salt water. St. Helena is said to produce it in larger quantities than any place in the world. If a little cultivated, from 50 to 60 tons per acre have been obtained. Sedge or salt water grass is a fine manure for it; common salt is good, about 6 or 8 bushels to the acre. The soil should be trenched or ploughed very deep, subsoiled, well pulverized in every respect, and manured highly with the most suitable manures, to produce heavy crops. Several kinds of the best have been analyzed, including the mangel-wurzel, by Davy, Herepath, and other eminent chemists, and they have all been found to contain much more nutritive matter than the Swedish Turnip—more than

as much again. Mangel-wurzel is generally raised for stock, although they are all good, but this perhaps is easiest raised—more obtained from an acre—all require the best of tillage. Mangel-wurzel may be grown on stiffer soil than some other kinds, and more so than the Swedish Turnip. The beet fattens cattle quicker than the turnip; it has been several times tried in England, considerably to the advantage of the beet. The latter has been found to be better for milch cows on many accounts; the beet it is also said are never injured by insects, while the turnip is continually subject, when first planted, to be laid waste by them, and often more than once the same season—another important advantage. The turnip, it is said, will stand the cold better, but the beet is not what may be called a tender plant, and this difficulty may be easily guarded against, by a little earlier gathering and housing of the beet. Should the tops remain uncut, the plant will stand considerable frost. On old pasture ground trenched up, enormous crops of mangel-wurzel have been raised. The ordinary yield on good land, well tilled, is from 20 to 30 tons per acre. When the Regents Park was forming in London, a part of it was trenched, the mangel-wurzel sown thick upon it, and such was the produce, that it was sold at auction; cow keepers in the neighborhood bought it at the enormous price of £80 per acre. It is said, if cows are fed too freely on them, they get too fat and will not give as much milk.

Prof. Mapes, has not furnished the secretary with his notes, and therefore what he said will not be fully reported. He remarked that Judge Van Wyck had given a good account of the beet. The Romans named it Beta from the resemblance of the seed to the letter B. That we have seven varieties of the sugar beet. That it is an exceedingly exhausting crop to the soil. The bassano beet (by Charles Downing,) has its concentric rings white in the centre; that it is entirely superior as a table beet. The long, smooth, fine, colored beet, commonly grown, is by some called the *Lazy Man's Beet*. Of the mangel wurzel, Mr. Rennie of Jersey, has raised seventeen tons and a half on an acre. I have raised seventeen tons on an acre. Seaweed is a good manure for beet. I am on the edge of the salt grass, and I use that and muck from the same, freely and with great profit. The

beet has very long roots, and if critically examined, is found to have them attenuated as fine as hair. Beet flourishes best on old manurings. Mr. Wiltse fed his famous ox freely on beats *partly soured* before given.

It is injurious to beets to take off their leaves while they are growing, but carrot tops may be mowed off without harm to the root. The beet takes all the season to become perfect. The professor explained the operation the *pectic acid* of the carrot and the peristaltic motions of the bowels of the animal fed with carrots, causing its dung to become almost like that of man, entirely digesting the whole feed.

The Professor said he would bring to the club some of his Alsace clover for distribution.

Dr. Richard T. Underhill of Croton Point, presented the club for distribution several hundred grafts of his fine greening and fall pippin apples. And cuttings of his celebrated Catawba and Isabella grape vines.

The Hon. Thomas Ewbank, Commissioner of Patents, presented seeds consisting of many varieties. The flour corn, a very roundish white kernel ; a small and a large Lima bean, fine giant cellery, Osage orange, horn carrot, &c., &c. They were distributed.

The thanks of the club were unanimously given to the Hon. T. Ewbank, and to Dr. Underhill.

Prof. Mapes proposed as next subjects, the carrots and parsnips. Carried unanimously.

The club then adjourned to Tuesday, May 4th, at noon.

H. MEIGS, *Secretary*.

Farmers' Club, May 4, 1852.

Austin Church, M. D., in the chair, Henry Meigs Secretary.

The Secretary read the following translations and papers, prepared by him :—

CARROT AND PARSNIP.

Maison Rustique—Carrot—Dawens—Carotta.

The carrot crop is an excellent preparation for almost all plants except colza and winter barley. It is proved that carrot will yield well on the same spot for several years, but is a great exhauster. Its light foliage does not allow it to derive any great portion of its nourishment from the atmosphere. It is more impoverishing than the potato. Carrot does not cover the earth like the potato vines ; and weeds come freely among them. Flax, turnip and rye, associate with carrots in growing better than other plants.

It is a well known fact, that, for carrot, the soil must be well amended ; and it is also true, that fresh dung gives to the roots a disagreeable odor, and causes them to fork. The ground ought to be well manured the year before, so that the carrot cannot come in contact with undecomposed dung or manure. One may employ pulverized manure, such as pigeon dung, oil-cake, poudrette, animal black ; and in order that these may act more effectually, they should not be scattered over the whole surface of the ground, but put into the drills. It is generally agreed that the ground should be dug or ploughed as deep as possible, and thoroughly harrowed. Then let the *weeds come up*, and then *harrow them down* repeatedly before you plant. This will save you much trouble at the future weeding, for young plants will have had a good time to grow. Take the carrot seeds and expose them to a hot sun, or to artificial warmth, until you find that you can, by rubbing them between your hands, get rid of the rough parts about them which hang on and make them cluster. The first weeding must be done by the hand. The foliage of the carrot has an odor which drives away almost every kind of insect. In

some districts, however, the slug knaws them pitilessly from their birth. In Anjou they have found it necessary to sprinkle powdered lime over the soil at planting. Ashes answer the same purpose.

PARSNIP (*PASTINACA SATIVA* LINNÆUS,)

Is cultivated at less expense than the carrot, and has one immense advantage over it—to wit, that it does not suffer at all in the most intense cold, when left in the ground. Beer is sometimes made from it. They should be kept in some dry place, in heaps, and so will keep a long time. They will nourish and fatten stock of all kinds—horses, oxen, cows, hogs. The roots are first fed to them raw, and when it is found that the animal begins to lose his relish for them, we boil the roots; then the stock eat them with avidity. Some farmers give their hogs nothing else the whole winter, and when hay and other forage is out or scant, they feed with parsnips, and it is found that their milk and butter becomes better and more of it.

In planting the carrot we cover it lightly with earth; but with the parsnip, we cover it at least one inch and a half deep. The seed does not keep well over one year. It is troublesome to sow, on account of the wings or fibres on the seed. The parsnip has not yet been very extensively cultivated.

LETTUCE.

Maison Rustique.—No country in the world consumes so much salad as France. A popular saying is that a French soldier wants nothing to live on but *soup and salad*. Among salads, lettuce holds, beyond contradiction, the first rank. It was unknown in France before the reign of Francis First. The first seeds of it were sent from Rome to Paris, to Cardinal d'Estrees, by Rabelais, in 1540. Rabelais' letters prove this. In 1562, lettuce was introduced into England, and before the end of the century, was common in all Europe. The white Batavian and cabbage Batavian grow very large, but for want of a good taste they have been banished from gardens. They, at first, were highly valued for the table; now they are raised for the hogs who are extremely fond of them.

DANDELION—DENT DE LION (LION'S TOOTH)—PISSENLIT.

For some years past this has been sought for much in its wild state. It is now cultivated for a spring salad, and is deemed one of the most wholesome. It has been remarked that the best are such as the moles in their work had covered a little with earth about the time of their beginning to grow.

PREPARATION OF SEEDS FOR PLANTING.

[Royal Agricultural Society of England—A Weekly Council. Mark Lane Express, March 22d, 1852.]

Mr. Martin, of No. 4 Hanover Square, informed the council of the progress made in this country to test the efficacy of the late M. Van Oost's Belgian method of preparing seeds before sowing, *not simply by steeping*, but by enveloping each seed in an artificial husk of powerful manuring matter, adapted to sustain the plant after the means employed to give increased activity to the germination of the seed had taken effect.

Malendie remarked "In no single instances where the seed was prepared by M. Van Oost or since his death by myself agreeable to the receipt left by him, has the prepared seed failed to vegetate; the plant in most instances, during its progress to perfection, has shown a greater luxuriance of growth than the unprepared, straw brighter, stronger, with a larger portion of the silicate of potash—the produce and quality equal to, and in some instances superior to that grown on land high farmed (so called).

CARROTS.

Prof. Mapes observed that carrots as a feed for horses was found to be about equal to oats, that one bushel of them and one of oats were as good for the horse as two bushels of oats only. Carrot is not injured by having some other plants growing among it. I sow long radish seed with my carrot seed—when the radish protects the young carrots, and its spread of leaf helps to keep down some of the weed—and when I pull out the radish, I find that the hole it leaves are good for the carrots—leaving spaces easily crowded in by the growing root of the carrot, and in the meantime while the radish was growing I found that its long root

brought up moisture to the surface and was in that way a benefit to the carrot. The land where you sow carrot ought to be subsoiled deep—for its roots run down deep.

Jackson of Lake Champlain wanted to raise carrots on an extensive scale and asked my advice as to the best method, and I recommended the sowing oats with them, as the oats came off soon enough for the carrots to perfect themselves. The last time that I saw him, he informed me that he had followed my advice and had obtained a large crop of carrots. For this root you must manure highly.

I keep my carrots through winter by piling them foot to foot interlaced and put them in dry places. I am now taking mine out perfectly sound, piled in that way, they keep almost as well as the parsnip. We must not use putrescent new manure for these roots—for it makes carrots have what are termed fingers and toes. If you put on such manures one year before you sow carrots on the land, with this care, with deep ploughing, and deep subsoiling and clean weeding we got a beautiful shaped and first-rate carrot, with new putrescent manures we have much inferior carrots. Long orange carrots have given nine hundred bushels on an acre. The long Altringham carrot gives eight hundred bushels an acre. The white Belgian gives eleven hundred bushels on an acre, this carrot is only equal to the long orange. The parsnip is cultivated much the same way as the carrot—it should be planted early, freezing instead of injuring it, does it good. It is a superior food for hogs but not for cattle. I get fifteen hundred bushels off an acre.

Dr. Antisell doubts the doctrine of the *Maison-Rustique*, as to the repeated crops of carrots being profitably raised annually for several years on the same spot. The quantity of phosphoric acid, lime and potash taken away by eight hundred bushels of carrots in one season, from an acre is too much for that. Each succeeding crop will demand an equal supply from the soil, and that cannot be advanced by the land unless you supply it. The parsnip does not require so large a supply. The carrot takes off in one season some three hundred and thirty pounds of the indis-

pensible materials I have mentioned. The unfitness of new putrescent manures for root crops is ascertained. They give out more ammonia than is good for them. The ammoniacal manures are hardly fit for root crops. The phosphate of ammonia is good after a year's application to the soil.

The Chairman adverted to the success of carrots sown with rye.

Mr. Lyon said that England has raised *twenty tons* on one acre.

The Chairman; eighteen hundred bushels of parsnips have been raised on one acre.

Judge Van Wyck; Jersey has raised 1450 bushels on one acre. Twenty or thirty years ago, carrots and parsnips, were very little grown in Great Britain as field crops, the expense of raising them, such as plowing, subsoiling, trenching and manuring very high, were too great, the produce would not indemnify the farmer for his outlay. Besides, they were considered as very exhausting to the soil, more than any plant raised, cabbage perhaps excepted, scourges which no land could bear even for a short time, without being reduced to sterility. The agricultural periodicals of that day or some of them, speak of these vegetables in this light. It was owing no doubt considerably to prejudice against these roots and in favor of another that such language was held. Turnips were then considered far the most profitable root for the farmer; they served as good food for his family, and the best for most of his domestic animals. They were considered both healthy and nourishing, more so, than any other of that day, they were not considered as an exhauster of the soil, but rather to improve it by properly cultivating them. Great Britain had been long in the use of them, nearly or quite a century—they suited their moist climate. They reclaimed by them much of their barren heaths of which this crop left the land in a fine state for producing most of the grains and useful grasses, rich crops of which in a few years followed, and large districts of country so unproductive, that they would hardly keep animals alive, much more fatten them, were

made fertile. It is not to be wondered at that the British population were strongly prejudiced in favor of this root and against introducing new ones for field culture, even to a partial extent. Similar prejudice exists in our country in favor of Indian corn. It is grown in every section of our immense country and to such an extent, that it exceeds in quantity all the other grains together—no better bread than it makes for man, both healthy and nourishing and used in so many different ways—a large majority of our population live upon it in part. As feed for animals of every class it stands first-rate, its stalks, blades, husks, &c., if properly managed are considered equal to the best hay.

The prejudices against root crops must be overcome gradually, as they have been on the continent and especially in Great Britain. If our farmers should be convinced in time from the experiments made in different neighborhoods, under their eyes, that the roots such as beets, carrots, parsnips, &c. are more profitable plants for them to cultivate as field crops, than Indian corn, there will be no difficulty in introducing them partially. Less corn will be planted and more roots, as to our farmers giving up the former, or even to any great extent, is out of the question; they are too fond of it as food for themselves, and they know too well from long experience its value as feed for all their animals, from the largest ox down to the smallest chicken. From the same cause too, they can calculate with more certainty the hazards against their raising a good crop of corn, with proper tillage. Carrots are very fine for milch cows and horses, but I have never heard of their being used to any extent to fatten animals on for the market. Parsnips, it is said, are good for milch cows, and to fatten swine on, but I doubt whether they are as good as Indian corn for the last purpose. It has long been admitted by the best judges, that Indian corn makes the firmest and sweetest pork, and fattens the animal faster than any other material. The beet, I should say, is a more profitable root for our farmers to raise, than carrots or parsnips; they do not exhaust the soil so much, and, although they require good tillage and high manuring a fair crop can be raised at less expense and labor, than either of the others. The beet too can be used for a greater variety of purposes than carrots

or parsnips. All of them are considered as originally salt water plants; salt water products have been found to be the best manure for them. The Islands of Jersey and Guernsey have produced the greatest crop of carrots and parsnips, having the full benefit of the ocean in air and manure. On the sea board and near our great cities and markets, where the most suitable manure for these plants can be easily and cheaply obtained, and the best prices for them all, without as much labor and expense, as they would cost on farms located farther in the interior, here they might be introduced and perhaps pretty generally cultivated.

Mr. Meigs proposed clover as the next subject. Adopted.

A tin case, neatly covered tightly, with strong paper, full of culinary seeds, put up in fine condition, sent by the Honorable Mr. Ewbank, Commissioner of patents to this club, were distributed among the members.

John W. Chambers, Clerk of the Institute, delivered to the club the potatoes of South America, with the following report.

SEED POTATOES FROM CALLAO.

In November 1850, Captain Phineas Windsor, of the ship *Angelique*, recently arrived from Callao, at Baltimore, forwarded to the American Institute of the City of New-York, potatoes of four different kinds, said to be the choicest of all Peru, also specimens of the wild potato of Peru. The specimens having arrived late in the season, and having also made sprouts from one to two inches long, it was deemed advisable by the officers of the Institute to place them in the hands of some gardener for preservation and propagation. They were accordingly placed in the charge of Mr. William Kent, of Prospect Hill, Long Island, who furnishes us with the following statement.

“After receiving the potatoes from the American Institute, I placed them in my green house. They were very much shrunk, and had long tender shoots from the eyes. The produce is from those shoots. The shoots before mentioned, I placed in small pots, and early in the season I turned them into the garden. They made good plants and seemed to grow three or four times. On

examining the roots I could find no tubers, and it was not until late in the season that they were dug. These I have kept separate, in dry earth and are numbered 1, 2 and 3; the whole product about half a peck.

WILLIAM KENT."

On motion of General Chandler, unanimously voted to call the potato, after Captain Windsor, the Windsor potato. And the thanks of the club were also unanimously voted to Captain Windsor and to Mr. William Kent, who has first naturalized them in this State. And to the Hon. T. Ewbank for seeds.

Gentlemen to whom these potatoes were consigned, were all agreed to try them faithfully, and, if successful, to return one half of their several products to the Club for further distribution.

Next subject, Clover.

The Club adjourned to the 18th of May. There were present at this Club about twenty four members, among them Mr. Darra-cott, of Boston, Dr. Antisell, Dr. Enderlin, Prof. Mapes, &c.

Farmer's Club, May 18, 1852.

Hon. Harris Scoville in the Chair. Henry Meigs, Secretary.

The Secretary read the following papers, prepared by him:—

CLOVER.

I am fond of quoting Dr. Lindley, whose great work, *The Vegetable Kingdom*, is truly so.

He places clover among that class of plants which yield beans of some form or other, and calls them all fabaceæ, or bean plants. Leguminous plants.

They are herbaceous plants, shrubs or vast trees, extremely variable in appearance. The most common feature of leguminous plants is to have what are called papilionaceous (butterfly) flowers; and where these exist, there is no difficulty in recognizing them, for they exist nowhere else.

Another character is to have a leguminous fruit: and by one of these two characters, all the plants of the order are known.

It is remarkable, however, that one or other of these distinctions disappears in a great many cases. There are very few double flowers among them. The species are distributed as follows :

In the Equinoxial Zone, there are	1,602
North of the Tropic Zone “	1,312
South of the Tropic Zone “	524

This list has been enlarged much. This order of plants is not only among the most extensive that are known, but also one of the most important to man, whether we consider the beauty of the numerous species, which are among the gayest colored and most graceful plants of every region, or their applicability to a thousand useful purposes. The cercis which render the gardens of Turkey resplendent with its myriads of purple flowers; the acacia, brazilleto, logwood and rosewood of commerce, the laburnum, the classical cytisus, the furze and broome, the pride of the otherwise dreary heaths of Europe; the bean, pea, vetch, clover, trefoil, the lucerne; are all so many leguminous species. The seeds of many of these papilionaceæ are articles of common food, by the name of pulso. The most remarkable among them is the arachis hypogæa, or *under ground kidney bean*, whose pods are forced into the ground after the flowering has been accomplished. This and the voandeza are very largely cultivated by the African negroes, who call the arachis *munduli*. The seeds abound in oil. The more common kinds of pulso are peas, beans, lentils, pigeon peas (*cajanus*), &c. Beans cannot be given to horses in much quantity without bad effects.

I add some remarks upon the alfalfa, of Peru. A cask of the seed was presented, by Captain Glen, of the U. S. Navy, to Prof. Mapes, who gave them to the Farmer's Club for distribution. I planted a little last summer. Its growth was slender. I supposed that our winter would kill it, for it was from Peru, where frost was never known; where it attains six feet in height, and may be cut for cattle several times in the year.

This spring I was charmed at beholding my alfalfa rising through the snow, among the very first plants to show life. It is

now, May 11, 1852, sixteen inches high, and has a deep, powerful, and healthy root. No clover in my vicinity has yet reached five inches in height. When we consider the unwonted severity of the past winter, in which the ground has been frozen five feet deep—deeper than ever before known—it is deemed a great gain to add to our pastures such an alfalfa as this. The situation of my specimen is unfavorable to fruit growth. We hope that some enterprising merchant will import the seed for large plantings.

TRIFOLIUM, TREFOIL—THE THREE-LEAVED GRASS.

There are more than forty-six species of it, seventeen of which are natives of Great Britain. The most remarkable are trifolium alpestre—the long leaved purple clover, or mountain clover. Its stalks are stiff, straight, and very simple. It grows in dry, mountainous, woody places, in Hungary, Austria, and Bohemia, &c., but is not said to be a native of Britain. 2d. *Trifolium medium*, grows in elevated, dry situations, or in woods where the soil is clayey or chalky, in England, Denmark, Scotland. 3d. *Trifolium melilot officinalis*. The stalk is erect, firm, branched; grows two to three feet high, loves grain fields and way sides; flowers small, yellow, pendulous, obtusely oval and serrated. This plant has a very peculiar, strong scent, and a bitter, acrid taste. Cattle, however, like it. Its flowers are sweet scented. It communicates a most loathsome flavor to wheat and other grain, so as to render it unfit for bread. 4th. *Trifolium pratense* (meadow clover), or red clover, is the one most generally cultivated for cattle. It abounds in every part of Europe, in America, and even in Siberia. 5th. *Trifolium repens* (creeping clover). It is known to be excellent fodder for cattle, and its leaves are good rustic hygrometers, for in dry times they are always relaxed, flaccid, but erect in moist or rainy weather. The alfalfa, or lucerne of Peru, lately introduced by Captain Glen, of the U. S. Navy, grows in Peru to the height of a man, and by an experiment made by the Secretary, it bears the last very severe winter as well as any grass whatever. The plan of sowing clover with grain is extensively used, but he that wants a true crop of it will sow it by itself.

Lucerne ought to be sown in drills, two feet apart—especially this alfalfa. The yield per acre of the repeated cutting is very great. Hoeing between the drills is very advantageous to the crop.

Clover gives to the farmer in its lovely growth, beautiful crests and delicious perfume, a full reward for his labor, before he puts it into his barn to feed his stock. The seed of the red clover at England weighs sixty four pounds a bushel. The seeds of the French red clover are small, plump and highly purple in color. The seeds of the white clover are very small, of a rich, golden color, weigh sixty-five pounds a bushel. The seeds of the yellow clover are of a dull greenish yellow, weigh sixty-four pounds a bushel.

The *trifolium incarnatum*, (blood red clover) has a conical flower of great redness of color, is sold by florists in pots as a flower; is much cultivated in Italy—does not bear our winter well—can only be depended on as an annual—grows two to three feet high.

In the regular rotation of crops, clover should come in every fourth year, according to some English practice. The Belgians renew it in every eighth or tenth year.

When clover is intended to be left to ripen its seeds, it should be mowed off early, or fed off by sheep in May. As the first crop of clover is seldom free from seeds of other plants, which rise among it, the latter are destroyed by mowing or feeding off, then the clover which grows more rapidly than most other plants, rises again without any mixture of weeds. When clover blossom is thoroughly withered and its seed nearly ripe, mow it and leave it on the ground with as little shaking as possible. Four to five bushels of the seed on an acre is a usual crop. Our common clover seed require to be clean of its husk. J. Rittenhouse, has invented a mill for that purpose, which costs about sixty dollars.

The seeds of the *Incarnatum* do not require the mill; they grow as well in as out of their husks.

The Bokhard clover (*melilotus major*) rises from six to ten feet high, is coarse—may be cut four or five times in one season—must be sown in drills—must be kept free from weeds—is perennial—does well in Virginia—its stalks when ripe make good hemp, when prepared in the same way that hemp is. Two pounds of its seed are enough for one acre. Alsike clover is supposed to be a hybrid between common red and white clover—is very hardy, stands well the winter of Sweden, is perennial, runs close to the ground.

COTTON.—LINDLAY'S VEGETABLE KINGDOM.

The cotton of commerce is the hairy covering of the seeds of several species of *gossypium*.

Royle's Illustrations and Wright's contain excellent accounts of this plant and of the various species used in commerce. (Vide.)

POTATO.—SOLANACEÆ.

The number of the species is very great in tropical America. In this order of plants it is an anomaly that the deadly Nightshade and Henbane, as well as the wholesome Tomato and Potato belong to it. The leaves and berries of the potatoes, however, are narcotic, while the tubers are wholesome. This is the case with other succulent roots of the dangerous families, such as the casava among the Spungeworts. Besides, as De Candolle justly observes, "Il ne faut pas perdre de vues que tous nos alimens renferment une petite dose d'un principe excitant, qui, s'il y etait en plus grande quantité, pourrait être nuisible, mais qui y est nécessaire pour leur servir de condiment naturel." i. e. We must not lose sight of the fact, that all our aliment contains a small dose of some exciting principles, which would, if there was a great quantity of it, be injurious to our healths—but the little dose, like a condiment is natural and proper.

Or as a small dose of Cayenne pepper is good and a large one dangerous.

Among the solanaceæ are also found tobacco, atropa, belladonna, and stramonium. The worst of the whole race is found at the Cape of Good Hope, that is the *acocanthera venenata*, a large bush with fragrant flowers. A decoction of the bark reduced to a jelly,

is used by the Hottentots to envenom their weapons. It is said to be a fatal poison and is used by the same people to impregnate baits for wild beasts, with its juice. The stramonium or thorn apple is a violent narcotic, when taken into the stomach—but in the hands of a skillful physician is a valuable medicine in mania, epilepsy, convulsions, tic-douloureux, &c. When smoked it palliates the distressing symptoms of pure spasmodic asthma.

Henbane as a common biennial weed is a powerful narcotic at the time when its seeds are forming, but comparatively inert at other periods. Its capsules and seeds are used in medicine and operate much like opium, but when much used is apt to produce insanity. Every part of *atropa belladonna* is poisonous. Children and ignorant persons have eaten the beautiful looking and sweet tasted berries of it, for they are very alluring. The effects produced are like intoxication—violent gestures, laughing, great thirst, difficulty in swallowing nausea, dilatation of the pupils of the eye—eyelids drawn down, redness and swelling of the face—stupor or delirium, low feeble pulse, paralysis of the intestines, convulsions, death. Hahnemann and Koref say, it protects persons from the contagion of scarlatina.

Buchanan says that the Scots mixed the juice of belladonna with the bread and drink which by their truce they were to supply the Danes, which so intoxicated them that the Scots killed the greater part of Sweyno's army while asleep. An extract made from the leaves of our common potato is a powerful narcotic. It is serviceable in chronic rheumatism and in painful affections of the stomach and the womb.

Capsicum belongs to the family; its fruit and seeds are powerful stimulents. Cayenne pepper is another. Melongena or egg plant belongs to the same house. The mandrake and the kangaroo apple are harmless, beautiful, and fragrant. They, too, are of the family.

Any person who will examine the common potato ball, and compare it with a tomato, will see how justly the botanists have made one family of them.

FOSSIL TREES—AUSTRALIA.

Lime is used to improve the soil. The fossil trees are burned to make the lime.

A fossil pine forest, on the eastern coast, in Lake Macquarrie inlet, has been recently discovered by the Rev. B. Clarke. At the base of a mountain range, composed of conglomerate and sandstone, with subordinate beds of lignite, terminating on one side of the lake or inlet, an alluvial flat extends to the water's edge, covering the sandstone rock, which is found in situ (in place,) beneath. Throughout the whole of this plain, stumps of fossilized trees are seen projecting out of the ground, presenting the appearance of a forest in which the trees are all cut down to the same level. At the distance of some yards from the shore, a reef is formed by vertical rows of the petrified stems, which project above the surface of the water. Many of the fossil trees on the shore have the remains of their roots extending into the sandstone rock below the alluvial detritus, and like those in the island of Portland, are in some instances surrounded by an accumulation of sandy rock, which forms a mound of a higher level than the rest of the stratum. The trunks stand, generally, about three or four feet above the surface, and are from two to six feet in diameter. The wood is silicified, (flinty,) and veins of chalcedony traverse the substance of the trunks between the concentric rings and medullary rays. In several examples, from sixty to one hundred and twenty annual circles of growth were observable. Beds of lignite occur both above and below the fossil trees, in the neighboring hills, and many localities along the eastern coast of Australia present similar phenomena. These stumps are burned to make lime to put on the land.

The occurrence of the trunks and stems of dicotyledons in a carbonized state, has been heretofore described. They are also found silicified in many localities. The most beautiful specimens I have seen are from the Lybian and Egyptian deserts and were collected by my friend Captain Head. In these the most delicate vascular tissue is permeated by chalcedony and jasper, and some of the vessels are injected with silex of bright vermillion, and of blue color, traversing the cellular structure, which is of a rich

yellow. Fragments of these trees are scattered everywhere among the sands of the desert ; but the most interesting locality is a sterile irregular plateau, which reposes on marine limestone, considerably above the level of the Nile, about seven miles east by south from Cairo. This district is called the petrified forest, from the immense quantities of silicified trees with which it is covered. Many of the trunks are scattered over the surface, among rolled and angular fragments of dark grit, and pebbles of jasper, chert and quartz. The large trunks occur in greatest numbers on dark colored knolls, where they lie, like broken stems of a prostrate forest, crossing each other at various angles. Two of the largest measured forty-eight and sixty feet in length, and two and a half and three feet in diameter at the base. With but two or three exceptions, all the specimens examined microscopically, possess dicotyledonous structure. No traces of seed vessels or leaves have been discovered. The situation and condition of these silicified trees indicate great change in the relative position of the land and sea in that part of Egypt ; the trees must have grown on the dry land formed by the bed of a former ocean ; this must have been submerged and covered by beds of sand and rolled pebbles, and lastly, the whole series of deposits were raised to their present situation, the retiring waters having removed the loose portion of the once continuous strata that were last formed, and dispersed them over the surface of the Lybian and Egyptian deserts.

ASPARAGUS.

The Maison Rustique (Farm House,) says, that it is met with in a wild state in Sicily, in Italy, and in all parts of Low Provence, comprised between the sea and the mountains, from Toulon to Antibes. That it is fond of the banks of rivulets uncultivated, and of ravines. In size it is not larger than a quill, but grows as tall as the cultivated plant. That its taste is very high, and incomparably more delicate than that of our cultivated asparagus, even than the very best raised in our gardens.

CELERY

Is not much used in France, and that only as a seasoning for soups and salads. It is increasing in use lately. Celery is an

indigenous growth of France. It is growing wild in the marshy parts of the mouths of the rivers Rhone and Var. Nature endowed it with its peculiar properties, for it is the same after cultivation as when wild. All along the Mediterranean shore of France, the provincial peasants call it, for its excellence, the *good herb*.

WATER CRESS.

The proverbial healthfulness of this is such, that in the spring, it is cried through our streets by the title of *la sante du corps*—the health of the body. The consumption of it is greatly increasing, so that, instead of looking to the natural rivulets and basins of water for it, it is now systematically cultivated. Vast cress ponds are made to secure a supply for Paris. The process was first established by M. Carrou, Mayor of the Commune of St. Leanard, near Soulis, in 1811. The place being prepared with a bottom of good soil a few inches deep—pieces of the plant are put in and readily take root where the water is upon them.

MUSHROOM.

I take much pleasure in extracting from such excellent authority as the *Maison Rustique* presented by Alexander Vattermare to the institute, the following article, relative to the raising of the mushroom.

It is known (or ought to be) that a mushroom, good and whole some to eat at its proper state of growth, becomes poisonous, if collected some hours later. There are three eatable mushrooms in the neighborhood of Paris. One of these, the mousseron, so closely resembles the Effile, that mistake is very easy and dangerous. And it is no less singular than true, that the mushrooms called ceps and oranges in the south of France are good to eat and wholesome there, but mortally poisonous if grown in the climate of Paris. We recall the very celebrated case of the Card, Caprara, Leg of the Holy See, who gathered some of these oranges in the forest of Vincennes,—and, in spite of the representations made to him of their poisonous character, determined obstinately to eat them, observing that the French lost, through mere

prejudice, one of the most delicious dishes. He and his Italian cook ate them and died.

The principal difficulty is in obtaining cheaply enough the white of the mushroom of good quality. We can always get the white naturally contained in good dung of the horse, ass, or mule, and to get abundance of excellent mushrooms. When you have established a good bed of them—take great care in picking them. Take hold of the stem gently, and turn it round, and so separate it from its root, and then other plants will grow from it. Mushroom beds require very little humidity, and a temperature as even as possible, at not more than 12° nor less than 10° centigrade, or 50 to 55 Fahrenheit. The dung must be taken after dry feeding of winter—green food destroys it.

One mode is to take the dung of cattle 2 parts, of sheep 1 part, and of horse 1; mix them well and even, pass the mixture through a hurdle. The white thus obtained is better than that gathered from wild mushrooms, or from old beds.

Beds for growing them should be made of one half of light soil, making the beds from one foot to one and a half feet thick, without putting any of the white in them, the beds themselves will be transformed into an entire mass of white. From dung of animals fed with green food, no mushrooms can be got. MacPhail made his mushroom bricks out of a mixture of cattle dung, sheep, and horse dung, in equal parts, and a portion of fern leaves bruised,—water is added to make it capable of being moulded into the shape of a brick. He then makes a hole in the centre of each brick, and puts into it a small fragment of the white, and then put over it the piece of brick taken out in making the hole. The bricks are then put into a heap, in such a way as to leave room enough about them all, for a free circulation of air. In a little time each brick will become a mass of white—which may be immediately used to furnish beds. Although this singular substance is of so delicate a nature, yet it may be preserved for many years in its productive energy, provided it is in a very dry place. The mushroom flourishes best in obscure cellars, in caves, old quarries free from humidity—from wind, and quiet places.

FUNGAL. FUNGI. AGARICUS. MUSHROOM.

From *Lindley's Vegetable Kingdom* I take the following:

A mushroom in Kamchatka is freely eaten by the people to procure an agreeable intoxication, yet it is one of the most poisonous. It is called *Amanita Muscaria*, from its use to poison flies. The inhabitants of the northeastern parts of Asia use it for the same purpose as other nations use brandy wine, arrack, opium, &c. These fungi are abundant there, about Wischna, Kamchatka, and Wilcowa Derecona. They are gathered in the warmest months, and hung up by strings to dry; some dry on the ground, and are said to be more narcotic on that account. The common mode of taking this fungus is to roll it up like a pill, and swallow it without chewing, because if you do, say the Kamchatkans, it will disorder the stomach. The effects appear in an hour or two, highly exhilarating and durable. The people preserve their urine for future drinking, as it produces the same effects on them. Five persons taking this from each other in succession became intoxicated. Mr. Drummond has sent from Swan river, Australia, spawn of a large field mushroom, as much superior to our mushroom as our improved peas are to the old sorts.

A curious kind grows on the living branches of South American beach trees—which is used for food during many months—at Terra del Fuego. The Australian mushroom, called, *Mylitta Australis*, attains a weight of more than two pounds, and is called native bread.

THE DAHLIA.

Maison Rustique, Paris 1845.

Presented to the American Institute by a Vattermare.
Extracts translated by H. Meigs.

Grafting on the Tuxers.—This operation was tried successfully in 1828, by Mr. Blake, of England, four years after it had been tried by Mr. David, at St. Cloud. It was proved to give a plant in all respects the same as the parent, but much smaller. Mr. Augustin Legrand has so perfected this process that by it, one can reduce at pleasure, a dahlia, to an half or a third of its usual dimensions, so that in the small dahlia we enjoy as its beauties in

a small compass. The method is to take a shoot of the required dahlia, and insert it in a tuber of any other dahlia, seedling or otherwise. The shoot ought to have four leaves formed on it. It is then inserted as a wedge in one side of the tuber, the top first being cut off, or it has been done by inserting it in the solid middle of the cut tuber. Some have tied up the graft with the usual means employed in ordinary grafting, but it seems that if the grafted tuber be placed in the ground, and the soil a little heaped around, and covering the cut tuber and its graft a little—it will grow. The perishing of the tuber does not hurt the graft.

The advantage of the graft is, above all, the speedy reproduction of it. The graft is generally rooted in eight or ten days. The grafting can be done in the fall, when you can choose a beautiful one—only give the graft suitable protection from the weather.

The Dahlia succeeds best in a light sandy and not very rich soil—such is that of Mexico from whence the dahlia came. An airy position suits it best. It does not love trees or buildings to be near it. It likes a sloping better than a level surface.

CHRYSANTHEMUM, (*Gold Flower.*)

This beautiful flower was brought from China to Europe about the year 1790. The primitive plant the author of all the varieties, is still esteemed among the finest, it is of a very deep brown purple color. We have now from that, hundreds of varieties of flowers. These varieties are multiplied from the seeds. All the flowers whether double or otherwise bear seeds. These should be planted in a shady and sheltered situation. Although these plants like free air and exposure, they do not yield good seed in a close situation—but they bear seed with difficulty unless at the period of flowering they are kept in perfect repose. The angle of two walks with a good exposure is good for them. The stems and branches must be tied to supporters—and the flower branches should be tied quite close to the flower, woolen yarn is good to tie them with. The seeds should be sown immediately after they are gathered. The plants grown from seed sown in Novem-

ber, and the plants protected in winter, will flower in the following October, 11 *months*.

This plant presents a vegetable phenomenon very well worthy of the attention of physiologists. The stems will make roots at any age of the plant. Put the cuttings in good garden soil suitably watered and shaded, until the stems have formed their roots, then young and old stems, herbaceous or woody, with either leaves or buds, or flowers on, considerably advanced, will all of them form roots and flourish.

In order to get the largest sized—take in the month of March, the longest and most vigorous stems, place separately in large pots filled with good garden soil.

HYACINTH.

For a great length of time the Hyacinth was cultivated in its original simple form, until in or about the year 1710 a Hollander by the name of Peter Voerhelm obtained the first double Hyacinth. This flower has but one advantage over the Tulip and that is fine odour. The colors are much less varied than the Tulip. The yellow one is scarce. Commonly we find in an assortment only three colors, the red, blue and white. It flourishes in sea air—when removed from the sea coast to some distant inland, the onion will perish in four or five years. Some of the seedlings will flower in the fourth year. The seedling while young must never be watered. When they flower, it is found that hardly one out of five hundred are worthy to be placed in a fine collection.

The Dutch make a secret of their Hyacinth soil. However the components used in Holland and in England are applicable to any compact clayed soil rich and light by adding sand. Take

Of rich garden soil.....	4 parts.
Sand.....	4 “
Mould with cow dung.....	3 “
Rotten leaves.....	1 “

12 parts.

ANEMONE.

The seed of this flower should be sown in August. It will come up in about two and a half to three months and not sooner, very often it will remain in the ground all winter and come up in the following spring. The seeds can only be obtained from the single flower—for the double ones are all petals. The seed is covered with a down which renders it troublesome to plant. We remedy this by mixing it with fine sand and then rubbing it for a length of time in our hands and thus rub off the down. This flower does better in boxes and pots than in the open garden.

ASTER.

Who does not know the Chinese Aster under its common title of Queen Margaret? This beautiful plant so rich in its flowers so varied in colors so like the plume—it is indispensable to our parterres. Flowering in succession for two months without interruption. Even the firsts frost of autumn do not stop the flowering of some of the more robust kinds.

Note by Meigs.—The exhibition of Asters in Boston, has been exquisitely beautiful in my view and those of my garden were more admired than any other flower.

PELARGONIUM.

The name given to this kind of flower by a German botanist by the name of Burman is derived from the Greek word signifying the bird called a Stork, because it is supposed to resemble the bill of that bird in the long conical pointed capsule which contains the seed. This plant is a true conquest of human art. The original flower does not approach the beauty of those numberless sorts obtained by hybrid crossing. These flowers require great care. The finest one in the best of health and most splendid flowering—perishes in a few days if neglected. They are almost all from the Cape of Good Hope originally—wild ones are found in some parts of Australia and Polynesia and latterly in St. Helena and the islands of the Canaries, the number of botanical species is great. In 1824 Decandolle counted 369. In 1839 Rob-

ert Sweet counted no less than 730 kinds. The odor of the Pelargonium does not reside in its flowers for they are constantly without perfume—but it is in the leaves of the plant entirely. It is agreeably only in a few species. In their conservatories they should begin to get the sun at about eleven o'clock in the morning. Light (says Neumann) is a part of the very existence of the Pelargonium.

This plant is propagated both by seeds and slips. From the seeds come new varieties. When you have made choice of two varieties which you desire to cross—you must reserve the strongest plant of the two to raise seed, and, at the moment it is in flower, take away very carefully all the stamina, without wounding the style, then cut off neatly, without any tearing, the style of the flower which is to fecundate the first, leaving nothing but its stamina. When the flower is perfectly opened, take off the mutilated flower, hold it by its stem delicately, and rub its anthers very lightly over the style of the plant which is to bear the hybrid seed; after doing this to as many flowers as you please, take off the residuum of the flowers to give strength to those which you have fecundated. After the operation, place the fecundated plants in a sheltered place, and away from the rest of your Pelargoniums.

CALCEOLARIA (*slipper flowers*,)

are shaped a little like a slipper or a pocket. Introduced into Europe in 1773, and almost forgotten until 1830. There are now about two hundred varieties: they came originally from Chili and Peru, and were first cultivated by the English—soon after in France, and then over the rest of Europe. Propagated by seed for new kinds, and by slips for the same kind. The seed must be sown as soon as collected; after sowing, comes up in 15 days; the best soil for it is pure heath earth; the seeds keep coming up sometimes for six months and more; the plants should be picked out when very young. It is very much infested by insects, and must be smoked well with tobacco.

In 1832, Messrs Young, of Edinburgh, sold some of their first hybrid calceolaries for ten dollars each.

SUBSOILING.

Prof. Mapes adverted to the singular result of subsoil plowing on the crops of Mr. Cleaveland of Jersey. He had, in pursuance of my advice, subsoiled his land and found the crops rather worse for it. This fact was not to be doubted, and it was a most singular exception to all other cases I was acquainted with. I therefore thought it necessary to examine his subsoil carefully, in order to know the cause. I caused careful analysis to be made by my faithful chemist, Mr. Bradley, who found absent in a remarkable degree the ordinary amount of phosphoric acid, and one or two other requisite elements. By adding which to his soil, my friend Cleveland will find his crops all right, and the depth of tillage by the subsoiling as good as others find it to be for growing and sustaining a crop.

Clover plowed in is a well-known fertilizer: the truth is that it is made up from organic matter almost entirely. Its ashes being but barely one per cent of the whole, the rest is carbonaceous matter from the atmosphere. It appears so, by a late analysis made by Prof. Way, which is undoubtedly correct. Dr. Anderson says that a crop of clover will remove from an acre of soil, about twenty-three pounds of phosphoric acid; that an experimental clover field, of 1849, had received for the first time in 1847, a dressing of superphosphate of lime, with great improvement of the crop. The red kellis hard pan of my farm abounds in potash and soda, and well plowed and subsoiled, soon make a fine soil. Clover throws off much excrementitious matter. Its deep roots bring up moisture. The decay of the clover turned in a carbonization,—it becomes charcoal carbon, it finally coats every grain of and—thus rendering the soil black.

A naturally sandy soil through which water will descend 2 ft. will, by free ploughing in of clover, become retentive of the moisture and of the grass, and it also will retain the elements of organic bodies, and let nothing but pure water leach down through it. The clover crop takes up water very freely, and one acre of it will, by evaporation, give hogsheads of water in one day to the atmosphere.

After twenty years of cultivation the soil constantly has increased in weight although so much clover has gone off continually so that the farmer is always increasing his amount of soil by ploughing in the clover. Still there is a higher value in old wood soils, peats, &c., where these can be got cheaply enough, the farmer should rely on them—when these are too far off he must stick to his clover. Peas are very good for ploughing in—the haulm is tubular so that when buried, they form so many pipes for the circulation of the air and render the soil absorbent like a sponge. In a crop the weight of it does not determine its value for feed—for it is ascertained that in the useful qualities for milk and for firmer bone in the calf, some crops are worth twice as much as others, and that is owing to free supply of phosphenic acid in the first—and not in the second case. With it the English farmers know that their swedish turnips are double in value.

The Professor has not furnished the Secretary with any notes, and therefore the errors must be charged to the Secretary.

Mr. Van Wyck.—The subject of clover as professor Mapes has observed is an extensive subject; it embraces matters more or less connected with the grains and grasses generally, there are many varieties of the clover. The principal ones, most in use here and in Europe are the *Trifolium Pratense*, *Trifolium repens* and *Trifolium medium*. They are scientifically called *trifolium*, from their generally possessing but three leaves, that is ninety-nine out of a hundred and perhaps more. The first which is the common red clover, is the one we have most to do with. This may be said to be almost exclusively used through our whole country, where the climate and soil will suit; it grows most rapidly and luxuriantly, leaves the land in the best condition for producing the grain. The feed it makes is the sweetest and most nourishing for stock of every kind, it is said to be a biennial or at most triennial, I have known it to continue in good lands with the best of husbandry considerably longer, the first two or three years it is undoubtedly the thickest and most abundant on the ground, after this it disappears gradually. In our country it is generally sown with timothy, the latter in the fall, and the clover in the spring, the timothy and few other native grasses of the

most succulent kind, with some of the clover, would stand rich and heavy, from seven to fourteen years, and that every year, without being disturbed by a plough. From 30 to 50 head of cattle kept upon it almost constantly the summer through, with occasional top dressings of gypsum composts of the barn yard, and all putrescent refuse matters which are known to make the best food for the grasses. This land too, it was pretty well known possessed the requisite quantity of inorganic or, mineral matters, such as calcarious, silex or sand and clay. The manure dropped upon the soil, by the cattle feeding upon it, was an important item. The grass standing thick and high, would protect it from evaporation by the sun and the rains soon wash them about the roots with the various top dressings, and the carbon of the atmosphere and the different manures, and such as the grasses themselves contained and made, would retain these fertilizing elements for the use of the grass plants as they wanted them. New Jersey possesses some very good land, but that on the sea board or a good deal of it, has always been thin and meager, mostly sand, very little organic manure used, and of the inorganic to correct and modify the sand. Within a few years rich marl beds have been found in many sections of the lands thus located, containing considerable potash, some lime and clay, this marl easily accessible has been much used and the soil much improved by it, the crops of grain and grass greatly increased, larger stocks kept, and triple or perhaps quadruple the quantity of barn yard manure made for the land. This was getting the organic and inorganic manures from the natural, true, and cheapest sources, much better than to purchase them in distant places at considerable cost and some hazard. Rich fields of clover are now to be seen which produced hardly enough to keep animals alive, much more to fatten or keep them in good condition.

Mummy wheat with its linnen wrappers (transmitted to the Institute by the Honorable W. Stanley, of Congress) was distributed among the members, some of whom supposed, from the appearance of the grains that it would vegetate—notwithstanding it has been entombed probably twenty-five hundred years.

The thanks of the club was unanimously voted to the honorable donor.

Professor Mapes proposed as the next subject, *The uses of mules in farming.*

Adopted. And the club adjourned to the next regular day, the first Tuesday in June.

H. MEIGS, *Secretary.*

AMERICAN INSTITUTE,
Farmers' Club, June 1st, 1853. }

Judge Van Wyck in the chair. Henry Meigs, Secretary.

Mr. D. J. Browne presented Joan de Cuba; Ortus Sanitatus. Herbs, plants, animals, reptiles, birds, fishes, &c. Folio. Mentz. 1485.

This ancient treatise is in excellent preservation; abounds in strong wood cuts. On the subject of mules and asses, he says that the ass is a vile, deformed and despicable animal, with a big head, long, broad ears, and a starved lean body, which cannot be any how made fat. On the shoulder he bears the sign of the cross. He is an animal hard to handle, hates a load, and is more brutal and unreasonable than any other beast. He is slow and lazy, but patient and good at a very difficult road. He eats thistles and thorns; being cold natured himself he dislikes cold. He is therefore not found in *Scotia* (Scotland) and the neighboring countries, nor in the equinoctial regions. The female carries her young a whole year; her colt is rather pretty while young, but as it grows older, becomes more and more torpid (torpior). The ass has very thick black blood, muddy like that of an ox. He and all other animals which have big heads, are more timid than other animals; he will eat thorny plants while soft ones are about him; he is a stolid, lazy, luxurious animal. Having the cross on his shoulders he is weakest there, but the stronger in his loins. His braying is horrible; he knows the voice of an ox; he has been accustomed to hear, and remembers a road which he has frequently travelled. Ass's milk yields but little butter, but is good for a cough, and for spitting blood, and dropsy. Esculapius recommended ass's blood with wine for quotidian fevers, three or four drops of it in a dose.

Translated by H. Meigs, the secretary.

The mule is called in Latin, *mula* ; French, *mulet*—an animal produced by a he ass and a mare, or sometimes between a horse and a she ass. The term mule is used to indicate any kind of animal produced by mixture of different species. The first is best, that is the issue of the ass and mare, being larger, stronger, and having least of the ass in disposition. The largest and the stoutest asses, and the fairest and finest mares, are selected in Spain, Italy and Flanders. In the latter they have raised mules of sixteen and some seventeen hands high. Mules are stronger, more sure-footed, go easier, are more cheaply maintained, and last longer than horses. Commonly, mules are vicious, stubborn and obstinate to a proverb ; and whether it causes the ill usage they get, or is caused by it, is all the same ; it is not easy to settle it with them.

The largest sized mules were employed in armies to carry baggage, under the name of *sumpter mules* ; this employment was due to their superior strength, hardihood and cheap feeding. In the days of Popery, many stately mules were brought by Italian priests from Rome to England ; they have continued since that time to be used less and less, until at last they were chiefly found in the employ of the millers. The mule thrives better in mild rather than in hot climates.

Honor was done to the ass in ancient days at Lampsaca, where the braying of them saved Vesta from a rape. For this the ass was crowned in the month of June, and is marked in the ancient calendar *Festum est Vestæ asinus coronatur*,—this is the feast of Vesta, the ass is to be crowned,—and the saying became *Vestæ delictum est asinus*,—an ass is the delight of Vesta. The learned name of the race *Equus asininus*. This creature submits firmly to blows ; he is temperate both as to the quality and quantity of his food ; he will eat rough, disagreeable herbage, which the horse and other animals despise ; but he is more delicate as to his drink, for he never uses water that is not perfectly pure. As his master never takes the trouble to comb his hair, he will roll himself on the turf among thistles, ferns, &c., as often as he can get a chance, and he does not care for the load on his back at all, he rolls all.

When very young he is a gay, sprightly, nimble and gentle creature, but as he grows up he soon loses these good qualities, and that, in all probability, in consequence of the bad usage he meets with ; for he becomes lazy, untractable, stubborn. He is furious when in love. The she ass is very affectionate to her young ; Pliny said that one was known to rush through flames to get to her colt. Notwithstanding the ill usage he gets, the ass forms a great attachment to his master ; he smells him at a distance, searches the places and roads which he used to frequent, and really distinguishes him from other men. He has a remarkable fine eye, an excellent scent and hearing. When you put too heavy a load on his back he hangs down his head and ears ; if you cover up his eyes he will not stir a single step further ; if you lay him on the ground on his side, and cover up the upper eye with a cloth while the other is on the ground, he will stay there, making no attempt to get up. He walks, trots and gallops as a horse does ; whatever pace he is at, if you push him, he instantly stops.

Pennant mentions a mule produced a jack-ass on a zebra mare. The ass, like the horse, continues to grow for three or four years, and lives twenty-five to thirty years and very often more. A singular question is, have you ever seen a dead ass ? Singularly enough a smile is excited, for upon reflection very few men ever saw one. There are two kinds of the race in Persia, one is used for labor and the other for the saddle. In Syria also two kinds, one very large and strong, with very long ears ; both kinds are there used for labor. In America, originally, there were no asses ; the Spaniards brought them and horses when they came. As these animals carry so heavy a burden in proportion to their bulk, as their keeping cost little or nothing, it is surprising that they are so little in use among us. This creature is less subject to vermin than other animals. The marks in the mouth are nearly the same as in the horse. The Spanish mule is occasionally a really handsome creature ; like the Spanish lady, his feet are very small, his pace active, head up. Among the great things done for his country by our well beloved Henry Clay, in the former way, at his home, is the rearing of many of the best mules in the land, some of them as fine as the world ever saw, in all points, and worth larger sums of money, as working creatures, than any horses, even often to

\$700 a pair. We thank Prof. Mapes for having raised this subject for consideration, and hope that it may be discussed, and cause a great increase in our stock of quadruped powers, which, in spite of steam powers, will never be dispensed with for millions of persons and places.

Prof. Mapes said that no animal had been so grossly slandered as the mule, for although the appearance of his head and ears are unsightly to all but himself, the symmetry of his body and limbs are far from objectionable. He is more untiring than the horse, and capable of making greater exertion without loss of health. Indeed a mule will perform one-third more labor than a horse of the same weight, during the same number of hours, in addition to which he will work more hours, and is less affected by heat or cold, is more sure footed than most horses, and appears to be alike insensible (while taking exercise) of the severity of mid-winter or the excessive heat of summer; whether at the Equator or Temperate Zone, he is equally serviceable and effective. He will subsist on from one-half to two-thirds the amount of food necessary for a horse while used for labor. Fodder of less expensive kind than that in ordinary use seems perfectly sufficient for him. In the vicinity of the New-Jersey meadows, mules are often fed on salt hay costing but three dollars per ton, and about half the amount of ground feed usually given to horses. With such keeping they are more efficient than the horse, costing less than half to sustain them. They require shoeing less often than the horse, and are much longer lived. When treated with kindness the mule is no more stubborn than the horse; indeed, beyond the unsightliness of his head, he has but one fault, and that is, if left for a few weeks in the stable without work, he forgets all his former training, and requires to be reinstructed; with slight use, however, he retains his habitudes as well as the horse. Who ever heard of a dead mule? Dickens says that "a dead donkey and a sailor in white top boots are not to be met with."

Neither buyer or seller are apt to inquire closely into the age of the mule. We now have a pair between thirty and forty years of age, performing full labor on our farm, without showing the slightest indication of having passed the prime of their mule-

hood. In every particular, the mule for farmers' use is superior to the horse. Mules, if badly used, will resent it, and from this fact they have the unenviable character of kicking. They certainly exhibit bad taste in choice of food, for they will eat a green thistle on top of a peck of oats, and occasionally will eat their bedding while fodder of a better kind placed in front of them, is retained for a desert.

President Tallmadge. The work of Joan de Cuba presents a very early specimen of good printing, for the art was only invented (that is printing on separate types of metal) about the year 1450. This work was printed on metal types, and those good, too, in 1485, only thirty-five years after the first attempt was successfully made. The singular mark called a cross on the shoulders of the ass is formed by one stripe of hair lengthwise his spine, and one crossing it at right angles; the hair in this cross is somewhat longer than the hair of the animal generally.

Mr. Browne. The numerous engravings in this work of Joan de Cuba are done on wood, and are the first used except in the Bible. Joan de Cuba was a Dutch naturalist, and traveled in Turkey, Syria, and the Holy Land.

D. J. Browne was requested to add some remarks to those he had presented from Joan de Cuba, relative to the mule and ass. He called for the reading of another volume from his library, the Natural History of Quadrupeds of British and Foreign Productions, by James H. Fennell, London, 1843.

The mule or moyle, is produced by the union of the male ass and the mare, and is much more esteemed than the hinny, by which name the progeny of the horse and female ass is distinguished.

The mules of Spain, and other countries in which they are extensively employed, are far superior to those of Britain. They are often sixteen hands high, and can carry seven or eight hundred pounds weight on their backs. They are patient, indefatigable, and unrivalled in being sure-footed, and these excellencies

render them most valuable beasts of burden in mountainous countries; and the caution and precision with which a drove of them, walking with great regularity in a single line, will cross over the stupendous and awfully narrow passes, or ascend and descend the almost perpendicular steepes, have excited the astonishment of many a tourist.

The she mule has occasionally, but very rarely, been known to produce again with a horse or an ass; but there is no instance on record of two mules breeding together.

The domestic ass is from the Genus *Equus* (horse) which comprises the *asinus* or ass, the zebra, *Djiggutal*, *Quagga* &c. He is distinguished by the tail having long hairs at the end only, where they form a brush, by the mane being short and erect, by only the forelegs having warty callosities, and by the markings being disposed in stripes.

The migratory herds of wild asses which inhabit, at one season, the warm climate of Persia, and at another the southern part of the Russian Empire, are supposed to be of the same species as the common domestic ass employed in this more northern region. But the accounts of wild asses published by various travellers are so dissimilar, that we may almost question whether the original species of the wild ass has been satisfactorily ascertained, and whether several other species do not remain to be described. Bruce in his travels (vol. 4 page 522) mentions wild asses very like ours in neck, head, face and tail "*only their skins are streaked,*" and as inhabiting the same parts of Abyssinia as the Zebra. It is not unlikely that the ass thus indicated is an undescribed species. Bell in his travels in Tartary (vol. 1 page 224) notices many wild asses like the common ass except that their *hair is waved white and brown like that of the tiger*. The species mentioned in Ainsworth's Travels (page 41) and in R. K. Porter's Travels (vol. 1 page 452) is the *khur*, or wild ass of Persia, Arabia, and Mesopotamia and is probably identical with that of the Thebaid and other parts of the African continent. It is also the *wild mule* of the ancients. It has a black mane and no line along the back or across the shoulder. Allied to this would seem to be the herds

of wild asses entirely of a pale yellow color which Le Vaillant noticed in Southern Africa and called by the Namaquas the *white Zebra*. Lastly there is in the kiang of Thibet or Himalayan wild ass, described in Moorcroft's Travels in the Himalayan Provinces (vol. 1 p. 311) and Blyth on the Genus Equus, in the Magazine of Natural History (1840, vol. 4 p. 371.) All these wild asses are large, fine, swift animals, presenting a very different appearance in height, sleekness and vivacity to our poor, domestic and degenerated ass whose ordinary personal appearance is too well known to require a particular description. Mention is made of the ass in Britain as early as the time of King Ethelred in 866—872 and at a later period in the reign of Henry Third. But either from disguise or some fatality the ass was entirely lost among us during the reign of Queen Elizabeth, Hollinshead informs us that in his time "*our lande did yeelde no asses*" and in Johnson's relations of the most famous kingdoms (1611) it is stated that England "bringeth not forth mules nor asses but of horse infinite proportioned." It was probably during the reign of James First, that the ass was introduced into England for the second time; for during his sovereignty we renewed our intercourse with Spain, in which country the animal is in general use and in great perfection.

It has often been said, and justly, that we know less of the natural history of those animals which are our most constant companion than those which are so wild and afar off. But this is easily accounted for from the obvious facts that these animals having long since exchanged a life of independence in a state of nature, for one of servitude in an artificial state, retain consequently but an imperfect notion of their proper habits. Such an animal has probably no idea of living in a herd with a leader at their head—never dream of the sandy plains or of any diet richer than hay and oats. What can we pretend to know of an animal that we hardly ever see in good condition or in good spirits. Denounced as obstinate and stupid, its very name made a synonyme for blockhead, it is cudgelled from its youth and no one gives it that fair unprejudiced trial which every British subject man or ass is fairly entitled to. The songs of the people have often more influence on the moral conduct than all the laws—and

it is to be hoped that the advice taught in a modern popular song will not be entirely lost upon the costermonger (fruit seller) and the tinker. The "hay" and "gee-wo" may accomplish nearly all one might require of a donkey, where every brutal blow may gain nothing but a kick well merited. A maltreated wretched horse is often as dull and obstinate as an ass. Indeed if the size of the brain in comparison to that of the body can prove the intellectual superiority of an animal, then the ass would make a wiser consul than Caligula's horse did. In the ass there is one part brain for every two hundred and fifty four parts of the grosser materials; while in the horse there is only one part of the former to every four hundred or in some cases to every seven hundred parts of the other elements.

The ass differs in size and abilities much,—according to the climate it inhabits. In Syria a fine ass is sometimes more valuable than a couple of horses. Mr. Frazer says that in Bagdad "most of the learned and holy professions prefer the ass, and so do all the ladies. These asses are, I believe, of a particular breed and from forty to fifty pounds sterling, is no uncommon sum for one of great size, good blood and fine paces. The favorite color is spotless white; they are magnificently caparisoned and have their nostrils slit, which is said to make them long winded. Heaven knows their wind is long enough when they bray. The bray of an ass is not much admired generally—but the author of a scarce tract on the nobleness of the ass 1595, after giving us all its sweet notes, concludes by declaring that the continual braying of five or six asses, form a melodious kind of music, "a song of world without end."

The ass is an excellent swimmer. In March, 1816, an ass belonging to Capt. Dundas, then at Malta, was shipped on board the frigate Ister, bound from Gibraltar to Malta. During a storm at sea, all the live stock was thrown overboard. The ass swam to Point de Gat, and made his way from thence through the mountainous country, two hundred miles, to the very stable he had last left. In a wild state he feeds chiefly upon the most saline and bitter plants of the desert, such as the kalis, atriplices, chenopodium, &c. Cornelius Agrippa, compares the domestic

ass to a scholar, inasmuch as is not only patiently endures penury, labor, and severe criticism, but it lives on little food, and is content with any sorts, be it lettuces or thistles and brambles. Pennant says it is very fond of the plantain. Bryant says it has the faculty of discovering distant waters by the smell. The domestic ass is more particular in the choice of water than food, and water which a horse will gladly drink, is often not good enough for an ass.

(Troilus and Cressida, act 3, scene 3.) "Thersites, would the fountain of your mind were clean again, that I might *water an ass at it.*"

The female is much attached to her young, which is a sprightly little creature in its youth, but soon assumes the gravity of its parent, when old enough to stand blows and other maltreatment.

Obscure dark bands are frequently observable on the legs of the young ass, as in other animals of its genus. The Persians eat its flesh. Its milk is considered very wholesome. Poppæa, the wife of Nero, used to bathe every morning in asses milk, which is also thought a great beautifier and preserver of the skin.

Sagri, or as we call it, shagreen, is made of the hide. The integuments being hard and elastic, form good parchment. It is used for pocket tablets and drums. The bones being very solid, were made into very superior flutes by the ancients. To serve the two latter purposes of literature and music, is the only honor that awaits the ass when finally released from the brutality of his master. But enough of the ass, though I am ready to say with Sterne, that "with an ass I could commune forever." Let every man who keeps one treat it well, and use it as though he loved it.

FUTURE WEALTH OF AMERICA.

Advantages of cultivating Tea, Coffee, Indigo, Date, Mango, Jack, Litchi, Guava, &c., &c., and a review of the China trade. 1 vol. 4to, pages 242, by Francis Bonyuge, for fourteen years resident in India, and the west of China. New-York, 1852.

The amiable and intelligent author is recommended to the Institute by Dr. Antisell. We make the following extracts from this valuable little book.

TEA.

Such is the general inferiority of tea plants, that a very small proportion of them yield tea worth anything. The difficulty in general is to get the seeds in good order. The Rev. Mr. Gutzlaff is known all over the world by his works, and Mr. Ball, a tea merchant, and for twenty years a resident of Canton, and whose word is worthy of all confidence, say that "it has been observed that the Chinese universally agree, from remote antiquity to the present day, that *only the Bolea mountains* produce the highest flavored teas." They affirm, moreover, that it is only in the central division of these mountains, which are known to the Chinese by the appellation of Vuy-Shan, (inner mountains,) where the highest flavored teas are produced, and that the tea deteriorates in quality, until in some of the remote districts the leaves are thin and poor, and of no fragrance or sweetness in infusion, and that no labor can make them good.

The seeds that the Chinese would give, even if they had good ones, would be the most inferior; but the good seeds are not at hand, and as there are no means of knowing the seed of an inferior plant from the best, money would not procure the better ones. But the jealousy of China is too well known to suppose that she would impart to foreigners the means of shutting up her thirty millions of dollars' worth of export tea. It must be remembered by all who have read the history of the silkworm, that it was conveyed out of China in a cane by a Jesuit.

The people who make their living on tea trading in China are innumerable, and through their agency the price is raised to twenty cents a pound by the time it reaches Canton.

Gutzlaff says the rent of an acre is about one dollar and fifty cents a year; a poor man raises on it three hundred pounds of tea, for which he gets seven cents a pound, or twenty one dollars, very poor support. The Hong laborers or coolies get \$15 a year; shoemakers about as much; tea packers have \$36 a year.

Mr. Fortune says of the tea planters. They are a poor, hard-working people. Their cottages remind one of those we used to see in Scotland formerly, where cow, pig and peasant lived and

fed in the same house. He said that only the poorest lands are allotted to the tea, while the rich soils grow rice and sweet potatoes. The tea leaves are raised for two to four cents a pound, but by the time they reach Canton, bring twenty cents. By the time the consumer gets it, it stands him, on an average, a dollar a pound, and that adulterated, old and valueless, when compared with the China tea leaf, as used in China or Russia. Such is the imposition of the middleman. Truly and really, the tea drank at Calcutta, England and America, is not good, nor has hardly, I may say, relationship to good tea; that the good teas are drank by the Chinese; that they are sent west to Thibet, Nepaul, and Russia. Ball says, that the Yen-Pouchong costs there, from \$3.75 to \$7.50 a pound, and the price of tea in the Bohea district, which is classed as Pouchong and Souchong, is from fifty-two cents to \$1.15 cents a pound. English and American consumers have to pay 100 cents a pound for Chinese refuse teas, and tea-house sweepings, mixed up with worthless leaves.

If we consider China as having a population of 367 millions—and they as tea drinkers, the amount produced is indeed enormous. A Chinaman and his family, everything about him is particularly clean and tastefully arranged, with his cheerful round face and small eyes. On one side of the room may be seen a little tea pot, and beside it a tea cup, to which the whole family have recourse at meals, three times a day, and in the intermediate time, as they become thirsty, or as neighbors visit, this little pot is again in requisition.

THE JACK FRUIT.

This is from a large tree, growing from 40 to 50 feet high. The fruit is about as large as the largest sized water melon, and grows on the body of the tree—about 30 to 60 of them on one tree. The skin of this fruit is very rough. The natives are very partial to it. It is frequently served up on the tables of the Europeans in India, in pies, &c. The wood of this tree is yellowish, and capable of high polish; best in India for printers' blocks.

The appearance of the tea plants in the different localities west of China, would impress the belief that it has always been indi-

genous there, being found in the deepest forests, where man could not have resided for centuries past.

The East India Company cultivated, in Assam, a Baree (so called there), or plantation, called "Chubwa." The produce was good, as to the quantity—being on an average, 320 pounds an acre; but the leaves had an oily flavor about them—unpleasant. The company gave it up.

I had four plantations of it in Assam. The first crops of leaves were passable, but the others felt like chaff in the hand, and would not fetch a very fair price. The British East India Company introduced China seeds; yet, although they had greater facilities for doing so than any other government, the seeds they got from China were worse than valueless, for they all germinated and grew up a pretty little brush of two to three feet high, full of leaves and no end to their producing seeds—but the leaves were small, dry, hard, and so stiff they could not be manufactured. From several thousands of them, I could never make a pound of tea. The Assam company tried every scheme—even plucked off all the leaves, supposing that the new ones, when they came out, would be soft; but they came out so slowly, and still so poor and dry, that the experiment proved a failure.

In the Kamoun mountains, north-west of East India, the British government established a tea-garden, in 1835, under the care of Dr. Jannison; but up to 1850, they had exported no tea. They have frequently tried to sell these plantations, but nobody would buy them. It takes three years to get any material quantity of leaves from the trees.

INDIGO.

Our fathers cultivated it 80 years ago, and the British Government gave us (their colonies) a bounty of a shilling a pound for producing it. Our fathers abandoned it for cotton, for which they got from a dollar to a dollar and a half a pound.

Sixty years ago only 134,000 pounds of indigo were exported, at the price of 62 cents a pounds. Now the East Indies export 13 million pounds, and it is sold in Calcutta, the lowest one dollar to one and a half—highest two dollars forty-five cents a pound.

COFFEE.

Ought to be introduced among us; and the *Guava*, that excellent fruit, yielding more fruit than any other. Its jelly is known and loved all over the world. The tree will flourish in our southern country.

Lime Tree.—The companion of guava and orange.

Citron.—Some trees are ever green, but this tree is ever bearing.

Gooseberry tree, nutmeg, bamboo, cane, India rubber, Kaya-poote oil tree, black gum varnish tree, grapes which we have not, the joint grass.

Mr. D. J. Browne said that the jack, coffee and India rubber, will not flourish in Florida, and probably not in any section of our country, unless perhaps in Texas.

Chairman.—The mule is a hybrid, generated between the ass and the mare—two different species of animals. Of course, the mule partakes of the qualities of both horse and ass, to a certain extent. A few old naturalists used to maintain that they were originally the same animal; that the latter was a degeneracy from the former; that they were an uglier animal, neglected by man, and suffered to run wild; and that they gradually acquired, in their wild state, all the marks and deformities which distinguish them. This doctrine is now abandoned, and from careful examinations, they are considered distinct races. The external and internal conformations of the two are entirely different. Another and perhaps more conclusive proof is that the mule is sterile and will not propagate its kind and continue its race.

Hence some naturalists have thought it immoral to propagate them in a different way, as contrary to the laws of nature. Asses are found wild in most hot climates near and within the tropics, and in some places in great numbers, in South America, Asia and Africa, the ancients used them for the same purpose as the moderns as beasts of burden, hardy, patient, and living on little food and that of the commonest kind. The animal is mentioned in the Bible and in several works of ancient history, but the mule is hardly noticed, they existed probably, but to a very limited extent, to

what they do at this day. Both animals with proper treatment are kind and docile, easily disciplined by man for his various uses, either to carry burdens on the back or move heavy loads behind them. The mule shows much sagacity as well as activity in travelling over rough mountain roads, he will carry his rider safer and faster, up the highest hills and down the steepest precipices, than any other animal. *Ulloa* the Spanish historian and traveller, says he never could have performed the long and arduous journeys in South America and collected the numerous and important facts which he did, without the aid of the nimble, hardy and sure-footed mule. His guides, who knew the animal well, instructed him to give free rein, not to check him in the slightest degree, his natural sagacity and experience, would select the safest route in ascending or descending the most dangerous and difficult passes. The least inclination of the rider on either side would disturb the animal's balance and most likely precipitate both into an abyss where they would be sure to perish. *Ulloa* states that in arriving at the foot of a high mountain or the brink of a steep deep precipice, he would stop for a few moments and deliberately survey the routes before him and make his selection, and he never found him to err in judgment, he always seemed to select the best, and of this he had many proofs. Some of these routes or paths were not only rough and narrow, but long and crooked, and when descending, he would slide down upon his fore and hinder feet and sometimes with great rapidity.

The extract from Cub's natural history is an exaggerated picture of the deformities and faults of the ass, written nearly or quite four centuries ago; it shows evidently the prejudices, which existed against the animal at that day, society was in a rude and barbarous state, compared with what it is at present. All our ablest modern naturalists in speaking of the ass, give a very different character of him—his defects, most of these say, are owing in a great degree to ill treatment and abuse from man, the latter say he is *stupid*, excessive labor makes him so, they say he is obstinate—no wonder, he is half-starved, he is fed with the coarsest food, and that sparingly, he is cruelly beaten, because he will not freely do the hardest work. Any animal, the horse, the ox, and even man himself would show similar habits when thus

oppressed, *rational* man only adds another defect under such circumstances to his asinine propensities or qualities, *cruelty*. The wild ass when taken and well treated, is docile and far more useful, he is considerably larger than the tame one, and comparatively good looking. The Spaniards have the finest tame asses and mules perhaps in the world, they treat them very kindly and are greater favorites with them than their horses, they often get enormous prices for them, from neighboring nations, and especially their mules, these are handsome and often 16 and 17 hands high, they make fine, safe carriage animals. Quito, in the republic of Escuader (Equator), in South America, situated at the foot of the Andes, a part of it under the Equator, but lying high, many thousand feet above the level of the sea, possessing a climate most salubrious and temperate, the year round, also extensive plains, moistened by heavy dews, and watered by numerous streams from the mountains, producing the richest pasture and the best natural grasses in great luxuriance. There the horse, ass and neat cattle abound and multiply rapidly, these are taken by man in a wild state, and easily tamed, and sold very cheap to surrounding countries, where they do not abound, or driven to the sea board and there disposed of. The ass here it said to be larger and better looking, than almost anywhere else, docile if properly managed, and with kind treatment, is made more useful to man than the horse.

Mr. Browne, proposed the native grasses of America as the subject for the next meeting. Adopted unanimously.

The Club then adjourned to Tuesday June 15, at noon. Strangers are respectfully invited to the meetings, and admission free to all.

H. MEIGS, *Secretary*.

Farmer's Club, June 15th, 1853.

Judge Van Wyck in the chair. Henry Meigs Secretary.

Present, Professors Enderlin, Antisell, Mapes and others.

The secretary read the following papers prepared by him

ON NATIVE GRASSES.

In the great geological survey of the State of New-York, a work which was undertaken by the government of the State, upon a representation of the utility and necessity of it, being made by the American Institute in 1835, on motion of Edwin Williams, a well-known and worthy member—we find in section Flora, vol. 6, by Professor Torrey, an account of our grasses. It may be well to state in our vegetable kingdom, we have 1,450 species of flowering plants, of which 1,200 are herbaceous, and 150 may be regarded as ornamental. Of woody plants we have 250 species, including 80 which attain the stature of trees. Of plants reputed to be medicinal, we have (native and naturalized) 150 species. The naturalized plants exceed 160 species. Many of them have been introduced from Europe with grain and other agricultural products, and among them some of our most troublesome weeds. Indeed, throughout our northern States, almost all the plants that are injurious to the farmer, are of foreign origin; and many useful species have likewise been so thoroughly naturalized and so widely spread, that they everywhere spring spontaneously from our soil. The grasses of our meadows, parks, lawns and road sides, are, *with few exceptions, naturalized European species*. The following are principal kinds: *pleum pratense* or timothy; *agrostis polymorpha* or florin; *anthoxanthum odoratum* or sweet scented spring grass; *holcus lanatus* or meadow soft grass; *festuca pratensis* or meadow fescue; *poa annua*, *trivialis*, *compressa*, *dactylis*, *glomerata* and *lolium pratense*. The annual meadow grass *poa annua*, is the most common of all the grasses, and the least absolute in its habits.

It is almost the only grass that will grow in towns. Though an annual, yet it is found in most meadows and pastures, perpetually flowering, affording a sweet herbage, relished by all stock,

and of as great importance to birds as wheat is to man. It hardly requires to be sown, for it springs up almost every where of itself. It is well, however, to sow a few pounds of it on an acre when perpetual pasture (not hay) is the subject. The *agrostis stricta* is the herds grass of Virginia and the south. The best natural pastures, carefully examined, were found by Sinclair, to consist of the following grasses: *Alopecurus pratensis*; *dactylis glomerata*; *festuca pratensis*; *phleum pratense*; *avenaelatior*; *anthoxanthum odoratum*; *lolium perennis*; *bromus arvensis*; *poa annua*, and *avena pratensis*; *ten species*. The Bermuda grass, doubt grass or *cynodon dactylon*. A tall repent grass which flourishes on sandy lands, is an object of cultivation at the South. It affords abundant pasturage for sheep, and it binds loose soil together. The levees of the Mississippi are planted with it. Many distinguished farmers on the southerly side of that river, speak very highly of it. It is difficult to eradicate. Mr. Affleck considers it to be most nutritious; and in his latitude (Washington, Mississippi,) it yields three cuttings a year, of the total weight of from five to eight tons per acre from a moderately good meadow; frost kills it however. The grama grass, native of Mexico and the West Indies, is small, grown on poor land, bears a very nutritious seed which it retains all winter, and is highly recommended for cultivation in the southern States. Captain Cook of the United States army, says it is stoloniferous (stools) and perennial. This must not be mistaken for the gama or Buffalo grass. *Tripsacum dactyloides*, a coarse, perennial, indigenous, southern grass growing to four or five feet high; it is very productive, but yet is thought not to be scarcely proper for planting. One of our most durable pasture grasses on inferior soil, is the dog's tail, or *cynosurus cristatus*. Curtis examined a sod of grass and found in that small compass *fourteen* different species of grass. In pastures, if the grass is allowed to go to seed they degenerate and go out, but if closely fed off and not allowed to go to seed, they last good much longer.

WHITE CLOVER.

Trifolium repens, must be a native, for it springs up spontaneously from the soil even when turned up from considerable

depths, where the seeds have probably lain dormant for ages. In our southern States, Mr. Elliott says, it salivates stock so that all kinds of stock eat it sparingly, and with apparent reluctance.

Medica Sativa or Lucerne, is hardly yet naturalized. The late worthy Jesse Buel of Albany, was very fond of it. It lasts about ten or twelve years—native of Europe. The Spanish clover and Buffalo clover, is the *trifolium reflexum* of Linnæus, is a perennial according to Muhlenberg; stem a foot high, flower head an inch in diameter, and is common in the western States.

The following table of grasses may be useful:

Anthoxanthum odoratum, or sweet vernal grass, grows 12 inches high, flowers in April, and makes early pasture.

Holcus odoratus, or sweet soft grass, grows 14 inches high, and flowers in April.

Poa alpina, or alpine meadow grass, grows 6 inches high, flowers in April, and is good for pasture and lawns.

Alopecurus pratensis, or meadow fox tail, flowers in May; is one of the best hay and meadow grasses, and 24 inches high.

Poa pratensis, or smooth stalled meadow grass, or the Kentucky blue grass, flowers in June; good for hay and pasture; 18 inches high.

Avena pubescens, or downy oat grass; flowers in June; makes good pasture on rich soil; 18 inches high.

Festuca hordeiformis, or barley fescue; flowers in June; valuable in most rich lands; 18 inches high.

Poa trivialis, or rough meadow grass; flowers in June; excellent on most rich lands.

Festuca glauca, or glaucous fescue; flowers in June; a good hay grass.

Festuca ovina, or sheep's fescue; flowers in July; good for pasture and lawn.

Festuca duriuscula, or hard fescue; flowers in July; good for hay and pasture.

Festuca pratensis, or meadow fescue; flowers in July; excellent for hay; 30 inches high.

Festuca colliacea, or spiked festuca; flowers in July; one of the most valuable for hay and pasture; 36 inches high.

Festuca calamaria, or reed-like fescue; early and prolific; 40 inches high; flowers in July.

Festuca elatior, or tall fescue, or Andes grass; 36 inches high; flowers in July; excellent meadow grass.

Festuca fluitans, or floating fescue; 18 inches high; flowers in July; is a good amphibious grass.

Festuca rubra, or purple fescue; 12 inches high; flowers in July; good for sheep and lawns.

Dactylis glomerata, or cocksfoot or orchard grass; 24 inches high; flowers in July; coarse but productive.

Poa angustifolia, or narrow leaved meadow grass; 24 inches high; flowers in July; excellent for hay.

Poa fertilis, or fertile meadow grass; 20 inches high; flowers in July; is an early grass.

Poa aquatica, or reed meadow grass; 72 inches high; flowers in July; very prolific but coarse.

Briza media, or quaking grass; 16 inches high; good for pasture.

Lolium perenne, or perennial ryegrass; 24 inches high; flowers in July; much esteemed.

Cynosurus cristatus, or dog's tail grass; 24 inches high; makes a good pasture; flowers in July.

Holcus lanatus, or meadow soft grass; 24 inches high; flowers in July; early and productive.

Holcus mollis, or creeping soft grass; 30 inches high; flowers in August; is a valuable grass.

Phleum pratense, or timothy, or cat's tail; 24 inches high; flowers in July; an excellent hay grass.

Hordeum pratense, or meadow barley grass; 24 inches high; flowers in July; an early and nutritious grass.

Aira cæspitosa, or turfey hair grass; 9 inches high; flowers in July; an excellent lawn and sheep grass.

Avena flavescens, or yellow oat grass ; 18 inches high ; flowers in July ; is a valuable grass.

Agrostis vulgaris, or fine bent grass, or herds grass ; 18 inches high ; flowers in July ; is an early grass.

Agrostis stolonifera, or florin ; it stools much ; 24 inches high ; good on peat lands.

All the foregoing grasses are perennial in a good soil. A rich permanent meadow for grass or pasture should always contain several of them. The hay made of them will generally weigh about one-fifth part of the grasses out. Grasses are rather remarkable for the amount of soda or potash in them. Sprengel found in one thousand pounds weight of rye grass hay,

Potash and soda,	12.75 pounds.
Lime and magnesia,	8.15 "
Sulphuric acid,	2.50 "
Phosphoric acid,25 "
Silica acid,	24.70 "
Chlorine iron acid,40 "

This is from grass before it flowers.

Lindley, in his vegetable kingdom says, that Persoon in his synopsis, counts 812 species, being one-twenty-sixth part of all the species of plants enumerated by him. In the system of Ramer Schultes there are 1800.

Lindley says: The distribution of cultivated grasses is one of the most interesting of all subjects. It is determined not merely by climate, but depends on the civilization, industry and commerce of a people, and often on historical events.

The value of grasses as fodder for cattle, is hardly second to that of grain for human food. The best fodder grasses of Europe are usually dwarf species, or at least do not rise more than three or four feet high, and the largest of these are apt to become hard and wiry.

Some grasses are used medicinally. Quitch or quick grass roots have some reputation as substitute for sarsaparilla. Sugar is a

general product of grasses. The Brazilian grass *Gynierium Saccharoides*, derives its name from its sugary properties.

Lindley makes the genera of grasses 291, and the species 3,800. Tea made with florin grass, mixed with oatmeal and skimmed milk, have been found useful in bringing up calves.

LENTIL.

The introduction of the Lentil into this country has been several times urged by the club within a few years. We are pleased to see it actually commenced in Great Britain.

Journal of Agriculture and the Transactions of the Highland and Agricultural Society of Scotland, contains the following :

“THE LENTIL—A NEW BRITISH CROP.—We spoke in the Journal of Agriculture for July, 1851, of that ancient vegetable, so often mentioned in the Bible, so prolific, and above all so nutritious, which M. Guillerez, a French professor in our city, has acclimatized by his unwearied efforts, at great cost, and without any other reward than the gold medal of this society. While rolls of tobacco and starch have received pure medals from the juries of the great exhibition, a new food, introduced into our country at the very moment when the potato seems to have lost its vitality, and threatens to disappear from the vegetable kingdom, as many plants have done before from exhaustion and overgrowth, the lentil, that made an attractive article of the admirable collection exhibited by Messrs. Lawson & Son, as well as in a separate form, was passed unnoticed. In 1851, M. Guillerez has seen his disinterested efforts repaid, for the fourth time, with a success beyond his most sanguine hopes, from a spot sloping to the north, and exposed to all the winds, at the back of South Queen’s Ferry. He has gathered $2\frac{1}{2}$ bushels (weighing 167 lbs.) from $5\frac{3}{4}$ lbs. sowed, and the rain in August having spoiled a great part of the crop which was then budding. The lentils sown between rows of beans have produced on an average 30.25, and as much even as 61 for 1; besides, he had a splendid crop of beans, and also cabbage, cauliflowers, salsify, beets and leeks all flourished most beautifully, the lentil rows being propped up by stakes. If the lentil

crop had not been injured by the heavy rain of August, the product would have been an hundred fold. Mr. Guillerez tried them as forage—he cut them off twice, and they grew to the height of four feet.”

It is now some years since we recommended the cultivation of the lentil, in our Farmers' Club meeting. We were induced to do it in consequence of the representations made by a distinguished officer of our government, who had suffered from dyspepsia for many years, had seen a Parisian account of the wonderful cures performed in Par's by a new vegetable medicine called *Erva Lente*, which he bought at a dollar a package of about a quarter of a pound, eat as directed in the form of a porridge, and got perfectly well. On some investigation, we learned that this famous medicine was flour of lentils. We sought for the lentils, found some at a grocer's, whose stout healthy appearance caused us to ask if he lived on lentils. He replied to us that he sent to Germany for them for his own use, and had been restored by them to sturdy health from a wretchedly low condition. He then sold some of them to us at ten cents a quart. We distributed them frequently among the members of the Club, at their meetings, accounts of which are contained in our transactions published by the State. We would renew our earnest recommendation to Young America, to add to her noble stock of vegetable worth the mess of pottage of the unfortunate Esau. It is partially introduced into Europe—more in Germany than anywhere else.

Professor Mapes requested Mr. Coon, of Troy, to speak as to his method of making fences of iron. He adverted to the enormous expense of our wooden fences, and the vast importance of a perfect system of iron fencing, &c.

Mr. Coon described his method. The first plan was to secure a method of compensation for the expansion and contraction of the iron rails by heat and cold. This he finds by alternating the rails, which being secured by nuts on the screw at each end of a rail, the space of the post occupied by each end yields sufficiently. The iron post passes through a cast iron box, which is firmly set in the earth, and well tempered. Each post is stayed by bars,

one on each side, from the top of the post to the iron box at the foot of the post. Mr. Coon spoke of the long known evils of the old wooden fences, the space they occupy, the accumulation of snow about them, the heaving out of the wooden posts, the short duration of them, and the near future which will render wood too expensive in a few years. The iron box at the foot of each iron post being hollow, keeps off the oxidation which otherwise would occur at the surface of the earth. Cost according to size, and from one or two dollars per rod, upwards.

Professor Mapes—I have had some iron fence on my farm for the last five years, and do not perceive the least appearance of decay as yet. Iron fences must be made sufficiently strong to perfectly stop cattle, and that the animals may see it, and avoid running against it, to their own damage and that of the fence, it should be painted white. Great advantages besides will attend the use of iron fences: the post is readily moved and driven down in a new place, and the whole material of such fences is likely to remain valuable for an indefinite length of time.

Chairman—D. J. Browne, the proposer of the subject, "Native Grasses of America," not being present, and no one offering to speak, although several have been invited, I will make a few remarks, by way of inducing others to assist in the discussion. No branch of agriculture is more important to the farmers of our country than the grasses, and in my humble opinion, not one as much so. The horses, the neat cattle, sheep, swine, wool, dairy, the various grains, even man himself, all live and thrive, directly or indirectly, on the grasses. They are the greatest source of manure; without pasture and forage or hay, very little stock could be raised and kept on the farm. Stock is the great source from whence our large inland farmers get their manure. Grass, while growing and falling or trodden down on the land, as much of it does and will be, especially at the close of the season, decays, mixes and assimilates with the surface earth, and assists materially, with the droppings of cattle feeding upon it, in forming what is called the surface soil, the bed or matrix of the whole vegetable kingdom.

Gardners are said to be farmers on a small scale, this is true in many respects, still there is a considerable difference. Market gardens are generally located near large cities, rivers, or the ocean. Gardners here get not only the best prices for their products, but they have to depend upon these almost entirely for their manure of which they require no small quantity continually, to keep their gardens in a rich productive state. They make none or very little of what is called barn or farm yard manure, the grasses so far from raising them, they wish to get rid of, they hoe, dig them up and destroy them. Hence, generally they have very little practical knowledge of the best manner of cultivating them, they have no interest in knowing much about them, in their system they consider them almost a nuisance. Whenever any question is raised by the farmer on a large scale, as to the best mode of cultivating the grasses and the best kinds of them, and how he shall improve his farm most by them, the gardner is apt to shy these inquiries, he is not practically acquainted with them, he has no interest in them, he farms it on a small scale. Let those he says attend to these matters whose interest it is, and whose prosperity in his business depends upon them. The existence of the curculio and plum weevil some gardeners think visionary; they are so small they never could see them, they never could find one. The entomologist discovers and describes them, when it happens they are not so very small; the gardener then wakes up, opens his eyes, and he can see them to, but it is too late, the enemy has committed his ravages, and his fruit and fruit trees are laid waste to him. Thus the gardener does not always look into matters which it is both his duty and interest to look into. Timothy grass is important for the farmers of the northern and middle States, it is a native; a few doubt its being a native, but judge Buel, and many others like him, have no doubt on the subject. It was brought north from North Carolina, where it became distinguished in about 1770, by Timothy Heudson, from whom it derived its name timothy, and by which it has always been known among us. It found its way to England in about 1780. The English, finding it a very good grass suiting their soil and climate, they cultivated it much, and soon gave it a scientific name, *phleum pratense*, meadow cat's tail, by which

last it is generally known in England. This grass, both for forage and pasture, has become one of the first grasses of the northern and middle States; it is a perennial, and mixed with a few other good grasses, it makes the best permanent pasture. The time for cutting this grass has been a serious question; it seems to be now pretty well settled by the practice of a majority of our best farmers, that when the flowers begin to fall is the proper time for cutting it. The reasons given for this, it is thought, are too strong to be resisted or refuted, and this, notwithstanding the experiments made by Mr. George Sinclair, Woburn Abbey, England, on the grasses, these went to show that when the seeds of timothy were hard or ripe, was the period for cutting it.

Kentucky blue grass is a native of our country; it will grow in many of our western States, but especially Kentucky, from this it takes its name; it is excellent for woods, lawns, and cleared open fields; it is succulent, nutritious and tender; it makes the best permanent pastures in all these localities. When planted properly, well managed as to feeding, and it gains a fair foothold, there is no eradicating it except by plowing. When tilled for any of the grains, it leaves the soil in the best state for any of these, and especially Indian corn; from 60 to 80 bushels an acre have been obtained of this, without any manure of consequence, and that from fields containing 50 to 60 acres, and this after being kept in grass and pasturage for eight or ten years. Very little expense on tillage, and no manure except what the cattle made in feeding upon it. The grass grows more nutritious with increasing age, chokes and roots out all weeds and inferior grasses, none can grow where it is; it grows all winter, with such winter as they usually have in Kentucky; all kinds of stock can not only live, but get fat upon it the year round. An eminent Kentucky farmer has said he could raise fine fat beeves upon it, and nothing else.

Gama grass is a native of the south, reaches as far as the Mississippi, a remarkable grass, all kinds of stock are fond of it; it grows rapidly even in a southern drought, and has been known, and the fact well authenticated in July, to grow forty-three inches, and was succulent and tender. In Alabama, it has been cultivated perhaps with the greatest success. In the southern section

of the valley of the Mississippi, there is some fine native grasses. The secretary, in his extracts, has given a favorable account of some of these. In the southwest, western and northwestern States, there are no doubt many valuable native grasses that have not been much spoken of or written about, for the want, probably, of persons on the spot or travelers to investigate or analyse these, and give a good history of their qualities, according to such analyses. There is a species of white clover common in most of the northern and middle States, considered a native, and no doubt is; it grows low and thick on the ground, comes up naturally on most untilled soils, especially where clay predominates; its blossoms are white and fragrant; it is excellent for milch cows, and gives a fine flavor to their milk and butter. Smooth stalked meadow grass, floating fescue grass, fowl meadow grass: our secretary, I believe, has noticed these, which makes it unnecessary to repeat their merits or qualities.

RIBBOND GRASS.

This grass if it possesses the fine qualities which it is said to do, is likely to become of great value in our husbandry; it is no doubt American. The late judge Buel had such an opinion of it, that he said it bid fair to become the gama grass of the north. The value of the grass was discovered incidentally, and is thus told by Mr. Robinson of New Hampshire. A neighbor wishing to get rid of some of the roots which incumbered his garden, pulled them up and threw them into an adjoining bog, where they took root and spread over a large space, excluding every other plant. The water flowed through the roots at all seasons yet the turf had become so solid as to bear a cart and oxen. It makes the best of hay and pasture—produces a great burden and springs up immediately after the scythe, stock of all kinds devour it greedily as hay or grass. It is perennial, spreads rapidly and may be easily transplanted—whether this remarkable grass maintained its character as described, has spread and increased much in its use by our farmers we are not informed.

John B. Wickersham of 312 Broadway New York, laid on the table for examination his plan and drawings of iron fences, gates,

rails, &c. of great varieties and in fine taste. He affords a fence four feet and a half high with fine rails secured by screws at one dollar a rod excluding the posts. One of seven rails at \$1.33 per rod.

Mr. Fleet reminded members in reference to our native white Clover. That much tilling of the soil improves the growth of it, that it will, without culture, come up almost every where spontaneously.

Prof. Mapes proposed for the next meeting Wheat as the subject. Unanimously adopted.

The club then adjourned to Tuesday the 6th of July next at noon.

There was no meeting held in July.

A. C.

FARMERS' CLUB, }
August 3, 1852. }

Alanson Nash, Esq., in the Chair. Henry Meigs, Secretary.

The secretary said, that the subject of the day was wheat. It was postponed by Professor Mapes, who is absent in consequence of the lamented and sudden death of his brother, major Charles Mapes. That he, the secretary, has been greatly pleased with the recent work of one of the most learned men of the day, Metzger of Germany, (an intimate friend of our Professor Enderlin,) on the subject of wheat;—he then read the following translated by him.

Maison Rustique, the Farm House. (from Vattermare.)

Professor Mapes has proposed wheat as a subject for discussion to-day. This is always interesting and ever will be, for it is the first of the gifts of God to man, of the three corn, wine and oil.

We call grain, Cereals, as the ancients constituted Ceres, the goddess of grain. These cereals comprehend wheat, rye, barley, oats, rice, millet, sorgho (resembling brown corn), alpiste, a grain, resembling dog grass, darnel, floating festuca, and buckwheat, do not belong to the family, although generally included in the list.

Wheat, or in the latin *triticum*, in german *weizen*, in spanish *trigo*, in italian *grano*. The ordinary uses of wheat are generally known, but the very best methods of making good bread of it, are by no means so extensively known or practised. The *vermicelli*, the *semoule* made of it, sustain immense numbers of people, while the greater portion of the human race know nothing of them.

Wheat, subjected to cultivation from time immemorial, and spread over a large portion of the globe, has more than any other plant felt the influence of the causes, which have a tendency to cause variations in vegetables to such an extent, that we have to day hundreds of varieties, and these too, every day changing and subdividing under our own eyes. Their great number, their want of fixed character, and above all the confusion in the nomenclature, make it very difficult to determine with any precision their varieties.

Did there exist originally one or many species of wheat? Are those original types still preserved in the wheats we now have? Can we find which they were? These questions will, probably, never be resolved. Linnaeus, whose classification embraced all the plants known at his time, admitted seven different kinds of wheat, then cultivated; five of them bald and two not. About the same time Haller made efforts to fix the varieties and establish their nomenclature. But the first important work on the varieties of wheat, was executed by M. Tessier, about the year 1780, who thus rendered the most real service to our farmers. This work was for a long time considered a classical one. More recently Mr. Seringe, director of the botanic garden of Lyons, has produced esteemed works on the subject, especially on the cereals of Switzerland, and latterly M. Devaux, one of our most distinguished botanists, has made new and profound researches, on the varieties of wheat, the results of which have been published in the transactions of the society of agriculture, sciences and the arts of Antwerp. This is one of the most useful sources of information on wheat. There have been many other works published on the subject; we ought however to mention particularly, that of Metzger, a friend of Dr. Enderlin, a member of the Farmer's Club of the American Institute, who speaks of M. Metzger in the highest

terms, entitled *Europœish Cerealien*, or *European Cereals*, which for plan and execution, appears to us to be the most useful and the most eminently classic of all essays on the subject. So many works undertaken on this subject, proves the deep interest of the matter. The *Maison Rustique* illustrates the varieties by faithful drawings. The ordinary wheat, *triticum sativum*, is bald, ear long a little pyramidal, it is the most general in France and in Europe, is most esteemed as grain. The straw holds the first rank for cattle; more or less humidity occasions a difference of eight or ten days in the harvest. This wheat is commonly tender; but that grown in the southern parts is often twice as hard as the other. A variety of this wheat is bald march wheat, a spring wheat.

The white flanders wheat, or blanc, or the ble blaze de lille, or white tea, or lille burnt corn, has a larger ear, a whiter grain than the others, grain oblong.

Talavera wheat; much like the latter, not so large an ear, has been carried from Spain to England for cultivation, and is extensively grown. First cultivated in England, about (now 1852) twenty eight years ago. It was formerly more strongly marked than it is now.

White wheat of Hungary; ear white, almost square, the grain white and round, was introduced into England at the same time with the talavera, and is now much and successfully cultivated in Blois, France, under the name of English corn.

Fellemborg Wheat.—A March wheat. Straw and ear almost as long as the tall wheat, but small grain, polished and white. Stands well on foot; a vigorous straw.

Pictet Wheat.—A March wheat. Long grain, tender. One of the best spring wheats.

White Touzelle.—Very white ear, long grain, yellowish color, extremely brittle straw.

Naples White Richelle.—Renowned at the south for its high quality. Ear white; grain oblong, yellowish white.

Beardless Odessa Wheat.—Among the various kinds tried in

France, at various times, we do not know of any other than this having been maintained in cultivation. It is more sensible of cold than our common sorts. Ear of irregular form, yellow, feebly tinged with pale red; grain yellowish, and of a very fine quality. It is both a spring and fall wheat.

Hedge Corn or White Velvety Wheat.—Ear square, very regular; hulls or glumes covered with a velvety down; quality fine. Received here from England (now 23 years ago), under the name of Hedge Corn. This seems to be a vague term, and it has been given to several successive varieties.

Common Beardless Red Wheat—Is much esteemed in many parts of France; is productive. Suited to strong lands.

Lammas or English Red Corn—Has a clear, red ear, almost gilded. Finest of the red wheats; is of a very good quality. Was introduced into England under great eulogiums, part of which are merited. But its cultivation, after becoming much extended, has retrograded, because the rigorous winters injured it more than other wheat.

Red Beardless March Corn.—From the north of Germany. Ear of a pale red; grain almost hard; straw long.

Red Beardless Corn of Caucasus.—Ear of a burnt red color, long, narrow; grain elongated, of a clear, red color; of good quality. When sown in autumn is remarkably fast in its growth; will probably make a spring wheat. It has one inconvenience: that is, its straw is thin at the foot and apt to lay down.

Square March Corn of Sicily.—Ear rough, brown, short, square, close; grain red, almost hard; an early variety of March wheat. Straw tall, and remarkable for the thickness of its upper parts.

Red Velvet Corn of Crete.—Ear of a deep red color, velvety, compact; grain a little angular in form, of a yellow, reddish, opaque, almost hard. For the number of stalks it gives, and for its earliness, it merits trial. The ears are interesting for their beauty.

The Bearded Varieties of Wheat.—The general character of the bearded varieties of the same species of wheat is, that the

ear is bearded and the hull or glume terminates in a long point. Their straw is commonly firmer than that of the beardless sorts. This makes them better on foot, but after threshing, the straw of the beardless wheat is more liked by cattle.

Bearded Winter Wheat with Yellowish Ear.—Ear closely compressed, beards diverging; grain reddish or yellowish. Formerly very extensive in France; productive, but it is giving away to the beardless sorts.

Ordinary Bearded March Corn.—Ear not so large as the last, more pyramidal; grain shorter, and a shade clearer in color. Was formerly extensively grown as a March wheat.

Tuscany Hat Corn.—This wheat is famous on account of its great employment in the Tuscany straw hat trade. They call these Italian hats, and they resemble those of Italy so closely that one can hardly distinguish the difference. This wheat, when sown from the seed, gives a strong and coarse straw. It is fine and delicate when sown very thick on soil rather poor. It has been so produced in France, but the straw is not equal to that raised in Italy.

Cape Corn.—This wheat has a white ear, long beard, very rough and rude, long grain, yellowish white. Is rather a March than an autumn wheat.

Herrison Corn or Hedgehog Wheat.—Ear compact, of an irregular figure, very numerous beards, diverging confusedly; grain short, reddish, almost hard, very heavy. Is an autumn wheat, merits study. Metzger mentions a spring variety of it, having a white grain.

Swelled or Pollard Wheat.—Ear bearded, square, compact, commonly having four equal fronts; grain oblong, bossed or vaulted on the back, almost angular. Straw hard, full, especially at the summit. Vigorous, productive. Straw tall, strong, hard to lay down. All the pollards are bearded, but in many of them the beard easily drops off when the wheat is ripe. The straw is but little esteemed on account of its hardness.

Smooth Red Pollard or Big Red Corn—Is from the Gatinais. Ear brown red, square in some varieties. The glumes or hulls very smooth and shining; grain reddish, tender.

White Smooth Pollard, or White Shoulder of the Gatinais.—Ear shining. This again is identical with what was called, a few years ago, *Corn of taganrock*.

Garagnon Corn of the Lozere.—This wheat is used in place of rice, for pottages. White, smooth. Beard sometimes white and sometimes black; grain of a fine quality, of a middling size.

Eastern White Petanielle—Is much like the preceding.

White Velvety Pollard.—Ear square, very regular, very velvety.

Red Velvet Pollard, or Big Red Corn, or Red Petanielle, or Grossaille, or Grossagne.—Ear very velvety, grain longer and larger than the smooth red Pollard.

Turquet Big Corn.—A sub-variety of the preceding, has a thick ear, elongated a little, regular square, of an ashy red color, grain very large. The most vigorous and productive of the velvety sorts.

Saint Helena Corn.—Called the giant corn of Saint Helena, is a sub-variety of the red Petanielle. We have received samples from many collections of wheats, under the name of *Dantzic Corn* which is identically the St. Helena wheat. No doubt it was taken from Europe, originally, to that Island, and now comes back to us.

^{ear} ~~ear~~ Mizacle Corn, or Smyrna Corn.—Linnaeus made a species of this remarkable wheat, but it is only a variety of the *Turgidum*. The extraordinary appearance of the ear, broad and thick, seeming a mass of ears grafted upon one another, has always made it interesting to cultivators, many of whom have tried it, and almost every one had to give it up, after some years' trial, on account of the delicacy of its growth and its dislike of winter. The grain, although rounder, more yellow and more beautiful than the other Pollards, does not seem to be of a better quality. It degenerates quickly to the simple ear.

Blue Pollard, or Comical Blue Corn—Is cultivated in England and some parts of France, esteemed for productiveness and hardness, differs from the other variety Pollards by the bluish color of the ears.

Black Petanielle.—This is remarkable for its height and the size and weight of its ears, and by the size and abundance of its grain.

Hard Horny Wheat, (*Triticum Durum*).—Ear almost cylindrical in shape, beard very long and rough. Hulls velvety, terminating in a straight point, grain long, angular, very hard and shining. Belongs to hot climates, grows much better in Africa than in Europe; does well in southern Spain.

Trimenia, or Bearded Sicilian Three Months' Corn.—Ear almost quadrangular, long, rather narrow, grain elongated, a little angular, straw fine and hard.

Poland Corn.—Easily distinguished from all others, by its broad, large bearded ears, yellowish white, glumes or hulls very long, like rye, and so glassy as to be almost transparent.

Polish, or Astracan Rye, Cairo, or Egyptian Corn, was received at the Jardin des Plantes, from Mogador (now), about 38 years ago. Is too delicate for France. Has a beautiful appearance, and of good quality.

Spelta, or Epeautre.—The hulls or glumes do not readily separate from the grain by threshing. They pass it through raised mill stones, to clean off the hulls first. It is considered a hardy wheat, stands wet well, cultivated chiefly in mountainous, cool districts—in Switzerland and the north of Germany. Is sown in Autumn, yet ripens well if sown in February. Metzger says some prefer this last period for sowing. Grain a little angular, of an indifferent appearance, but gives a flour very much esteemed for its mild and delicate taste. Is preferred to all other flour to make light pastry.

The beardless Spelta.—The variety of Speltas, bearded or bald, smooth or velvety, are very numerous.

Black Bearded Spelta.—Metzger says it is vigorous and productive, and ought to be sown in February or in the fore part of March.

Starch making Wheat, (*Triticum Amyleum*).—Ear bearded, compressed. All of this sort are spring.

Amelkom, or Amylom.—Is productive and of good quality. Straw esteemed for cattle.

Ingrain Wheat.—Ear bearded, very flat, two rows of grain, single, resembles, too, round barely more than it does wheat. It is valuable because it grows well in bad calcareous or sandy soils. Is a full wheat.

We see in the preceding list of wheats, white and red, varieties of the *Triticum Sativum*, or wheat proper for sowing or planting, as the word *Triticum Sativum* means; that those called white wheats are best of the whole. Desvauz says that hard wheat yields but seventy per cent of flour, while the tender wheats, especially the white ones, yield ninety per cent of flour. But the hard wheats possess some advantages over the soft ones. Bread from them is more savory and nutritious than from the white. This compensates in a good degree for the difference of percentage. They are preferable for vermicelli and other analogous preparations. The circumstances which give these different qualities are not yet well understood. In general we know that hot climates, like Africa, make hard wheat and the cold ones soft wheat.

Linnæus made out of winter and spring wheat two distinct botanical species. Modern botany denies this. Tessler says that the renewal of seed cannot be considered generally as necessary or even useful, and it is not indispensable to sow seed of last crop. Wheat of 1779 produced very fine crops in 1787, 1788 and 1789.

Thus far leads the *Maison Rustique*.

We will add the results of American experience as far as it is ascertained and recorded. The confusion caused by giving various names to the same kind of wheat is as troublesome as it is to have the names of a man Smith, Jones, Brown, or a dozen more. The attempts made by our Fruit Conventions to re-instate order out of the chaotic nomenclature of our fruits have been very valuable, not merely to science but to dealers, which the French call the commerce of it. For the articles are sold by their names

and very often turn out entirely different from the buyer's notion of them.

Featherstonhaugh says that a bushel of wheat weighing 62 lbs., contains five hundred and fifty thousand grains or kernels; that when the plant has fairly got out of the ground, a set of upper roots are thrown out by it, close to the surface of the ground, which search all the superficial parts of the soil in their reach, while roots which are thrown below, with the same activity search for pabulum down below. These two distinct sets of roots serve, first, to fix the plant firmly, and next to find nutrition. The upper set take atmospheric supplies or surface fertilism, and put out new stems, which are tillered up, and so greatly increase the product.

A classification of wheat in reference to its varieties in the flour, bran, straw, and adaptation to soils, is a grand desideratum; but it will require time and talent, with much perseverance, to make such discoveries. There are estimated to be 150 varieties or sub-varieties. Large premiums have been offered for crops of spring wheat on a large scale. Those who best understand the growing of wheat say that spring wheat is preferred to all other for a grain crop, and that this is owing to the small quantity of leaf it bears, less, perhaps, than any other wheat, and also to the short duration of the leaf, which fades and falls down about as soon as it has attained its full size.

Sir Humphrey Davy's analysis of spring wheat, proved that it is more nutritious than winter wheat, because it contains a larger proportion of gluten, or half animalized matter. He found it,

	Of Sicilian wheat.	Gluten.	Starch.	Insoluble matter.
	100 parts.	21	75	5
	Spring wheat,	24	70	6

With respect to the qualities of red and white wheat, it is not a little remarkable that the same experience we have as to the more nutritious character of red wheat over white, was stated by Collumella, of Rome, more than 1800 years ago, showing that ages and difference of climate have not altered these conditions of red and white wheat.

Pliny, not long after, said that the trimestrian (believed to be a spring wheat) is the best; that its name means *three months*. Of the manifold variety we only need about four kinds of bearded, and two or three beardless.

As to the kinds cultivated in the United States, the fine sorts, which so well succeeded in England and northern Europe, generally very often fail with us, owing to their being slow in maturing, which render them liable to rust and mildew. Wheat from southern Europe and the Mediterranean seems to be best adapted to our climate, for they ripen very early. A red Mediterranean wheat is now extensively cultivated here, and has improved in quality for flouring. Millers who at first objected to it, and would only take it at a reduced price when it first appeared, now pay the same as for other red wheat; and it is said of it, that it has suffered less than all others from the Hessian fly, that terrible scourge of American wheat.

We add some notices of grasses resembling wheat:

Melampyrus, or black wheat, is a branched, spreading annual plant, 12 to 18 inches high, the seeds of which resemble wheat in shape and color, but turn black in drying. There are four kinds of it in England.

1. Crested Cow wheat—Grows in woods and thickets, and sometimes in wheat-fields, flowers in July.

2. Purple Cow wheat—Like the former, flowers in July, grows in wheat-fields, stem a foot and a half high, purple color and stem sharply angular, flowers large, is well worthy of cultivation, ought to be named *Melampyrus sativum*, instead of *Avernse*; that is, worthy of being planted, instead of running wild.

3. Common Yellow Cow wheat—Very common in woods and bushy places, especially on clay or loamy soil, flowers in July and August; cows very fond of it, and Linnæus said that the best and yellowest butter was made where it was plenty.

4. Wood Cow wheat—General habits like No. 3; two or three species of it are in our country.

Wheat grass to which our wheat belongs, has five species, which are indigenous to England. They bear the name of, 1st. Sea Rushy Wheat grass; 2d. Creeping Wheat grass, or Couch grass, a common pest everywhere; its root-stocks, however, contains a large share of nutritive matter; it is gathered in Naples in large quantities for horse feed; it is called Dog's grass, Quitch or Quick, or Couch, No. 5.

Fibrous-rooted, or Bearded Wheat grass, differs essentially from No. 2; grows two feet high, and gives a large supply of spring herbage. 4th. Crested Wheat grass, native of Scotland, the roots consist of several long, strong, woolly fibres, suited to sandy soils, grows 12 to 18 inches high, flowers in the second week of July, seed ripe about the last of August.

5. Dwarf Sea Wheat grass—Annual, growing on a sandy sea coast, flowers in June and July, root many long, downy members, stalk rigid, wiry, branching from the bottom; two or three inches high, leafy, very smooth and polished, erect or decumbent.

Alanson Nash, the chairman, said that he had been highly pleased and instructed with the reading of the paper prepared by the secretary. The subject of wheat was one of the highest importance to the people of the United States; he had a work in his possession which was a publication by the ancient Romans, in the days when that nation had overrun the northern parts of Africa, from the Atlantic ocean to the Red sea, and from the Mediterranean to the Deserts of Sahara, as well as Arabia and Persia to the Indus, the whole of Asia Minor, Europe, to and beyond the Danube, including Austria, Germany, and perhaps Sweden and Norway.

The work which he spoke of showed what were the number of Roman provinces belonging to this empire. Each province had a consul and governor or president to govern, who established a banner or flag emblematical of its natural productions. The whole of Africa was shown in the days of the Roman Emperors, to have been the great grain-growing country of that nation. The banner for this country contained three large ships, loaded with wheat, coming from Africa to Rome, while the goddess Ceres presided in

her majesty over this part of the Roman empire, holding in both hands bundles of wheat, apparently of the red bald-headed variety. It would seem that the white wheat of modern days comes from the cool climates of the north. In Africa we find there were no less than eleven or twelve provinces to this part of the empire, including the kingdoms of Morocco, Tunis, Tripoli, Algiers, Lybia, Thebes, Egypt, and some others. Each of these banners represented the goddess Ceres, holding in her arms an immense basket of bread. At this day Spain also was a large wheat-growing country; while Germany produced but little, if any, of the seeds of the grain. Africa is evidently an exhausted country; so are Asia Minor, Palestine, and most of the Turkish empire; that is—the people have grown wheat and grain until it will grow no longer. The ingredients of the soil which produced wheat have become exhausted, and it is so in many parts even of the United States. Wheat will produce straw, but the heads will not fill with the berries of grain. Our cotton lands, and tobacco lands, and wheat lands are exhausted precisely in the same way. New England now produces little wheat, and the State of New-York only shows a production of eleven bushels and less, at the present day, to an acre, on an average. Indeed, some accounts reduce the production to the small quantity of seven bushels to the acre in the State of New-York, on an average crop. The starch and the gluten, and other combinations to produce the wheat crop from the soil are evidently fast becoming exhausted with us; we can no more grow wheat out of the soil unless we feed it than we can fat cattle without giving them food. The phosphoric principle is wanting, and must be supplied as fast as it is taken away by crops. Manure that will supply the starch, the gluten, and other ingredients composing the grain of the wheat are wanted, and must be obtained and put into the soil, or we must abandon the culture of wheat from necessity. The limes, with their various combinations will do this, and supply the food for the growth of wheat. Professor Mapes, of Newark, N. J., has a manufactory of the *super phosphate* of lime at his farm. It is a thing wanted, and when applied to land at the rate of 300lbs. to the acre it is sure to give a good crop. He sells this lime at \$50 a ton, which will supply $5\frac{1}{4}$ acres with a most invaluable manure. We lately, in company

with a committee of the American Institute, visited the farm of H. W. Robinson, of Newburgh, to inspect his crop of wheat, consisting of 18 acres, growing in two fields. He told the committee that he plowed up his land in the fall and sowed large quantities of quick lime over the ground, and then plowed it before the wheat was sown. The effect of this was twofold. First—The lime drank up the noxious acids which might exist in the soil. Second—It had the effect to destroy the grubs and worms which attack the roots of the young wheat. At this day it is well known that the smut and fly as well as the weevil are reproduced by the parent depositing an egg in the kernel of the wheat, near and in the germ. This egg must be destroyed, or when the wheat has become sown and grown, the egg hatches out and produces a maggot, which feeds upon the stalk or sprout of the wheat. This maggot is formed into chrysalis, and hibernates or falls into a state of cocoonry, like the silk-worm, which then produces a moth, or miller, or beetle. In this state the animal assails again the wheat, by stinging and depositing the egg in the kernel of the grain. The only remedy yet discovered to destroy these eggs is, to wash the wheat clean and soak it in lime water from 4 to 12 hours. The wheat if now sown with ashes, will receive another benefit, inasmuch as the *house ashes* will kill any of the eggs which remain possessed of vitality after the washing in lime; besides, the ashes will prevent the grubs and worms from assailing the young sprout of the wheat in the ground. Perhaps it requires a series of experiments to ascertain how long wheat should be washed in alkali water to destroy the vitality of the eggs deposited in it, as also to learn how long wheat and grains may be soaked in lime water and ashes without destroying the sprout or germinating powers of the wheat. We have known it soaked twelve hours in lime water without injuring the wheat, yet, at the same time, effectually destroying the eggs deposited in it. To try an experiment which will demonstrate the truth of our remarks, take a fresh-laid hen's egg and dip it in a lye of ashes, hold it there 15 minutes or longer. This egg, when set under the hen, will never hatch or produce a chicken. The alkali has destroyed the reproductive powers of the egg. Such is the effect on all eggs of the animal economy.

Mr. Van Wyck.—I shall confine my few remarks on the subject before us—*wheat*—principally to the kinds and manner of growing them in our own country. We grow, generally, the bald and bearded wheat, and the different varieties of these, of which there are a number—the red, white, &c. The growth of these and their quality and quantity, like every product of the soil, depends very much on the tillage, plowing, pulverising, manuring, and considerably on the climate.

Many of the northern and middle states have heretofore raised much and very fine wheat, and been remunerated for their labor in price. Latterly, since the western states have increased so rapidly in population, and raised such quantities of it on their naturally rich and virgin soil, that we cannot compete with them in producing the article. It is calculated that the new states, west of the mountains, produce more than one-half of the whole wheat crop of the United States, all of which must find a market on the Atlantic side. It is said by some to our farmers of the Atlantic states, make up for this disadvantage by ameliorating your exhausted soil; use more organic and inorganic manures, and a better tillage generally, and you will come nearer, in quantity of wheat produced by your competitors of the west; that your vicinity to the market, and the less expense you are at in reaching this, will make you their equal. A better tillage and higher manuring would, no doubt, help our Atlantic farmers in other things as well as wheat, such as grasses, Indian corn, oats, dairy, horticulture, &c. These would all pay better than wheat; besides, the increased facilities, within a few years, of getting things to eastern markets from the west, and especially wheat and flour, does not make such a difference between us in cost of carriage. The western crop of wheat, this year, we are informed from the best sources, is considerably greater than ever known before, and of the finest quality; and it is doubted whether it can possibly pay, under such circumstances, for any increased expense in its cultivation. The prospect of a fine crop throughout Europe this year will also affect our market, and with the present system of free trade, depress still more the price of the article. It is highly probably that at tide water with us the price will range

from 62½ to 75 cents a bushel, the latter the highest that will be obtained, and this, perhaps, for years, and sometimes as low as fifty cents. The best time for cutting or harvesting our wheat has not been noticed. I must be indulged with a few remarks on this, as I consider it of some importance. It has been settled by experiments of scientific and practical farmers in Europe, and especially Great Britain, that wheat cut two weeks before fully ripe, is the best, for several reasons. It yields the greatest quantity, and handsomer flour, 80 lbs. on the hundred; whereas, that cut when fully ripe, gave only 72 lbs. The bearded wheat, when ripe, loses considerably in shelling, by gathering; the bald wheat not so much; the calyx or cup which holds the kernel is closer around it, and holds it tighter. The straw of the earlier cut wheat makes better food for stock, and better manure for the land, more of the juices of the stem and leaves are absorbed by the latter while drying and ripening after being cut; the stem is not dried to mere wood by standing and ripening in the ground. The practice generally among our farmers has been to let their wheat get fully ripe before they cut it; many, latterly, have pursued a different course, and no doubt benefitted by it; they have put the sickle in earlier, a short time before the kernel got perfectly hard, and the straw dry as a stick.

Mr. Nash being obliged by business to leave the chair, called Mr. Chambers to it.

George S. Riggs, one of our members, sends from the country some of the insects which are now devouring the leaves of the potatoes in Dutchess, Ulster, and Albany counties, and says that R. L. Pell speaks of it as hitherto unknown to us, and that it is the same that attacked his California potatoes. The insect is a black winged bug, of the coleopter kind, the body of a dark ashy gray. Some members of the club think that it has been heretofore known; others had never seen it before.

Andrew Williams, Esq., of San Francisco, at the request of the Secretary, sent to the club specimens of the celebrated redwood of California, and of its foliage, which were examined by the members. Mr. Williams, in his communication, dated 15th May, 1852, says that he had examined some of the trees, and found

them to be from 30 to 45 feet in circumference, and from 150 to 250 feet high. One had been cut down to make shingles of, and there were made from it 143,000 shingles, and the wastage was equal to 6,000 or 8,000 more. This tree was perfectly solid. At the height of one hundred feet from the ground, where the diameter was five feet, Mr. Williams counted the concentric circles or rings, and they were one thousand and seventy-seven. At the height of 120 feet, the body enlarges like shoulders, and here the diameter is fourteen feet. This is far from being the largest tree. Near this one is another, which is hollow at the bottom, and in this hollow five men roomed all last winter. They cut one hole through the tree for a window, and another for a door, and one for a fire place. Near this is what is called the monument tree, now 17 feet in diameter, notwithstanding about a foot of the bark and wood have been burned off.

The curled red wood is a remarkable growth, all its timber presents curls. The concentric rings on the strait-grained red wood are very narrow; they do not average each more than the twentieth of an inch, and generally, far less. Beautiful furniture is made out of the curled wood polished. The juice extracted from the wood makes an indellible marking ink. The bark of some of the trees is from two to seven inches thick. The foliage resembles that of the pine generally. Mr. Williams will continue to give to the Institute all acceptable information. He is one of the oldest members of it, having joined in October, 1828.

A member of the club wished to have another conversation on the subject of the potato disease, and to call on a member who has made valuable experiments in Jersey.

The secretary then proposed that as the subject for the next meeting. Adopted.

The secretary then read the following, prepared by him, on the original agriculture of our New England Indians.

Philosophical Transactions, London, 1731.

Botany and agriculture. To preserve specimens of plants and flowers, put them between sufficient paper, and then the whole between thick iron plates, very smooth, screws [on the four corn-

ers to compress. When bread had just been taken out of an oven, put in the plates for two hours, then with equal parts of aqua fortis and brandy, with a brush pass over the leaves and flowers, then take gum dragon, dissolved in water, and with a fine brush pass it over the backs of the leaves and flowers, to make them stick to paper. They will preserve their fresh color for a long time.

INDIAN CORN.

The corn used in New England, before the English settled there, was called by the natives meachin, and in some parts of South America by the name of maize. The ear is for the most part about a span long, has commonly eight rows of grain or more, according to the goodness of the ground; each row usually has above thirty grains. It is of various colors, red, white, yellow, blue, olive, greenish, black, speckled, striped, &c.; white and yellow are the most common. It has several strong thick husks on it. It grows to the height of six or eight feet. Taller in Virginia than in New England. More northerly they have a peculiar kind, called mohausks corn, which, though planted in June, ripens in season. The stalks are short and the ears grow near the bottom of them. When the ground has been a long time planted, the Indian put under or adjacent to each corn hill, three of the fishes called aloofes, and they had a double crop. The English have learned the like husbandry, where these aloofes are plenty or where they are near the fishing stages of codfish, where they get the heads and gurbage for their lands. The land then is good for English corn (wheat). The Indians and some English plant a kind of French or Turkey beans, the stacks of corn serving for poles to climb, and in the vacant places, between the hills, the Indians planted pumpions and squashes, which load the ground with as much as it will bear, and many sprinkle turnip seed between the hills, and so after the harvest of corn, beans and pumpions, they get a good crop of turnips. They save the stalks of corn for fodder for winter; the Indian women make baskets out of the husks. They cook corn various ways; one they preferred was putting into hot ashes till it turned inside out, (popped corn.) This they pounded in a wooden mortar with a long stone pestle, to fine flour. This is their constant food at home, and

especially when they travel; the English often procure it from them and mix milk and sugar with it. They save green sweet corn by boiling and then drying, which keeps it till wanted.

Yet I have much more to say of gardens, as a match for granaries. Coleworts, cabbages, roots of all sorts, rapes, turnips, carrots, parsnips, skirrets, (the *sium sisarum* of Lindney,) and potatoes do challenge the precedence before granaries. They are a kind of under ground granary and do often hold out when corn faileth. The Spanish potatoes require diligent culture. They are called glander malaceuses, being brought from Volez Malaga, a province in America. More than a dozen of their huge Spanish ships were brought at one time to Seville (Seville) in Spain, fully freighted with these potatoes, and were soon dispersed all over Spain. The club then adjourned.

H. MEIGS, *Secretary*.

Farmers' Club—August 17, 1852.

Colonel A. O. Houghton, of Rahway, New Jersey, in the Chair.
Henry Meigs, Secretary.

Colonel Houghton observed that he had, in common with other citizens, been deeply impressed with the sad condition of the potatoe crop all over the world, and, like many others, had made the prevention of it a subject of much thought and experiment too. Being appointed one of a committee to investigate, about seven years ago, he had assiduously endeavored to find out both the cause and a preventive.

After trying various plans he at length (when the disease appeared in the tops of his potatoes decided on pulling the tops up, leaving the potatoes in the ground, in order (as he reasoned) to prevent the disease going down through the stalks to the potatoes,) and then leaving them there for three weeks. This plan succeeded, for he found that when he had pulled up the stalks and then dug up the potatoes a few days after, they rotted, but after lying three weeks he found them sound, and that they kept sound when stored away in a proper dry place. His neighbors were

slow to believe him, but now they are convinced. One of them, my good neighbor Benjamin M. Price, thus writes to me about it :—

August, 1852.

A. C. HOUGHTON, Esq.

Dear Sir—In answer to your late enquiries respecting my potato crop of 1850, in connection with the rot, I will state for your information, that I had a patch of about three acres of light loamy soil. I commenced digging them in the fore part of September, on Friday, and put about forty bushels in a dry place, and, on the Tuesday following I overhauled them, and found I had lost thirty bushels of the forty. I then followed your directions—I pulled up all the vines on the balance of the field, and cleaned the ground of all weeds &c., and so left the potatoes in the ground for some three weeks; I then dug them up and put them in a dry cellar, something over two hundred bushels of them. A large part of them remained in the cellar until the next spring. I do not think that after this last digging I lost two bushels out of the two hundred. I sold them mostly for one dollar a bushel. I have no doubt that if they had all been dug at the time of my first digging, and put in a heap, I should have lost them all.

Respectfully yours,

BENJAMIN M. PRICE.

Colonel Houghton was asked what he believed to be the cause of the disease, and then he exhibited potatoes and their stalks just taken up on his farm. The stalks were green, leaves brown, withered, and full of holes resembling lace. At intervals along the stalk were dark colored elongated spots. Colonel Houghton had first observed on his hand (when pulling the diseased stalks) a minute speck, not distinguishable as a live being by the naked eye. He called his daughter to look at it. She could not distinguish it. He then gave her a microscope of high power, and she exclaimed—what a beautiful pink worm. This mite leaped, as some other mites do, with great activity. Colonel Houghton has since that found this mite invariably in diseased stalks, and nowhere else. A minute egg precedes the mite. To the question what is your reason for leaving the potatoes so long in the ground after the tops are pulled? He replied—that he supposed that by removing the tops and all the weeds the communication to the

potatoes was removed—that such of them as were attacked would soon perish in the earth, and could not there affect the sound ones; whereas, if all the potatoes were dug up at once, and put together, the rotted ones would rapidly spoil the good ones, and such is the result of Colonel Houghton's experience for the last five years.

Professor Mapes remarked that the lacing of the leaves was the work of a fly; the leaves being so injured the potatoes begin a new growth. I dig them then to prevent it. It is strange that the mite in question should be found in some sorts of potatoes only. My early June potatoes were never attacked until last year, together with the mercers and carters. My mammoth nutmegs are yet perfectly sound. Roots of all kinds are apt to rot one another. All rotten ones must be removed. This is true of most vegetables. We always take out the bad ones—nothing new in that. We sometimes find them keep well until January in our cellars, and then begin to fail. In that case we find our succeeding crop diseased. I have applied in the hills of my potatoes pure charcoal dust from the spark catchers of locomotives. This has some potash with it. I proved it to be a good application by the effect seen in omitting to put it in some hills. It appeared to give entire protection to my potatoes. No one disputes the beneficial effects of charcoal on the potato crop. Salt is also very good. I put it on to kill the white grubs.

Colonel Houghton—I suppose I shall be laughed at for attempting, in face of such a world of experiment and learning, all of which have failed to propose my remedy; but, as I implicitly believe I have succeeded, and with the hope of doing an immense service to my fellow men, I brave the laughing and earnestly ask others to try my plan.

Professor Mapes—This subject is too important and serious to be a matter of ridicule. Suppose that all plans hitherto have failed, does it become us to give up in despair? No. Let us go on with all practice and all our science, and try again and again. Some of my neighbors put raw muck in the hill or furrow. My whole potatoes, cultivated flat, give me a more even growth of tubers, and more of them. I know more than fifty persons who have

(as they believe,) saved their potato crops by pulling the tops up. Some have tried the plan of placing their feet on each side of the stalks, and then pulling the stalks up, thus preventing the potatoes from being hauled up. But this did not save their potatoes. Perhaps they then dug them too soon, not leaving them as long in the ground as Colonel Houghton does.

Colonel Houghton.—I have tried salt muck on my potatoes, and no benefit. I have pulled up alternate hill stalks, and twenty persons can testify that the pulled ones always left sound potatoes when the others were deceased. I have tried mowing off the tops, but it did no good.

Professor Mapes.—I have tried that too, and thought it did good, but others tried it and found no benefit.

Colonel Houghton was asked what kind of potatoes he had planted, and he said various kinds, and all of them proved sound by my plan.

Professor Mapes.—The premium of ten thousand dollars, offered by the State of Massachusetts for a remedy for the potato rot, is confined to citizens of that State.

Dr. Antisell was requested to offer his opinion of the plan, &c., of Colonel Houghton. He said, I have nothing new to offer. In looking for the cause of the disease, much has been done in vain. The scientific men of Europe have made profound investigations as to the cause and remedy for this potato malady in vain; their reputations have suffered from it. We are obliged to Colonel Houghton for his communication, but we must be very careful. He supposes the deposit of a minute egg in the stalk, from whence the pink colored mite issues, which works its way down to the tubers. If it is an egg, it must have been deposited by the fly below, because it will not descend, but must ascend by the means of the ascending juices of the stalk. It does not appear certain that the egg or the mite, are the causes of the disease. Find out the fly which makes the deposit of the egg, and then, perhaps, we may find some preventive. Learned commissions appointed to research, have ascribed the malady to air, earth, the plant itself, &c. They have agreed in one thing, that a rupture of the

cells or the tuber takes place. This club should use the utmost caution in stating causes. Let us more safely state facts.

Dr. A. rather inclined to the opinion that the appearance of the egg and the caterpillar, were the results of the disease rather than the cause. While the root was decayed, the stem above was healthy; the disease could not have descended from the stalk, nor have been produced by the caterpillar.

Professor Mapes mentioned the valuable experiments on potato culture made in St. Helena, by Beatson. He planted them at various depths, and various assorted sizes. The largest potatoes gave the largest crop, and those planted at six inches depth did best. A German mode is to bury the stalk all but its top. When the stalk is twelve inches long, and as it grows, continue to bury it in the same manner until it blossoms. They got a hundred times as many tubers, but these were of the size of peas and grapes.

We occasionally find the whole potato which we had planted still whole, after producing its crop. It is, however, greatly changed. It is now hard and heavy, but, on examination, we find it watery, and that all the starch that was in it when planted, has gone into the new tubers. Mr. Pell, of Pelham, scoops out an eye of a potato with a small guage, and plants that, the piece of potato about the eye being about half an inch in diameter. I tried this, and got less weight in the crop. My plan now is to plant potatoes six inches deep, and cultivate them flat; no hills. I have tried tilling the soil well, making the surface smooth, laying the potatoes on the surface and covering them entirely with six inches depth of salt hay. They yielded well, but whenever the sun reached any of them, it made them green and very bitter. When potatoes are exposed so, this occurs even on the uppermost potatoes in an open barrel. The potato malady has lessened in the last two years.

Professor Harris, in his valuable entomological work, says that no insect theory (in this case) is right.

Colonel Houghton wished to state a singular fact with regard to locusts. Some seven or eight years ago I observed the dry rot

in the potato, and young locusts in the large potatoes. The locusts never touch poplar, pine, or cedar trees. They make incisions in the under side of slender branches of some trees, and put into the incision about nine eggs in one row. I have seen them backing out of their holes in the ground, and procreating within twenty-four hours. The large potatoes containing the locusts had the skin hard and dry, the locusts under that.

Richard Bacon, of Simsbury, Conn., on visiting the repository a few days ago, examined the potato bug sent by Mr. Riggs, and now writes to the club as follows:

SIMSBURY, August 16, 1852.

SIR: Your esteemed favor of the 12th was duly received, to which in reply I say: The bug to which you refer is evidently a new comer here; I can find no one who has even noticed it before, still they may have been here in small numbers, but now they are confined to the potatoes. I have not, neither have others, so far as I can learn, found them elsewhere than on or about potatoes. They vary in size from one-half an inch to a full inch in length; as you see them on the potato tops, they appear striped down the middle, and on each side of the hard jet; black covers over their wings. Their bodies are of an ash color. Those here are precisely like those which you showed me at the Institute. Here they are confined to the mountain, or near it; are not general, and I cannot learn on enquiry that they are scattered over a large extent; I only hear of them in this locality and Granby, say eight miles north, and there on the mountains. Query? Did not the mountains bring them up? They appear shy, and if disturbed hide themselves in the ground about the hill. They are much engaged in the act of copulation. I can learn of but one piece of potatoes of much size, which they have materially injured, that is, say, $\frac{3}{4}$ to 1 acre, directly at the base of the mountains, new land, on which the leaves are entirely eaten off, and the bug is still there, but not so numerous as two or three weeks since. In other pieces of potatoes the bug is gone and the plant appears to have nearly recovered from the attack; other pieces, within 200 rods, I could not discover a bug, or any signs of their having been there. Query? Will they not be much increased

another year, if not killed by the winter? If they are now here for the first time, and the potato tops are their favorite food, where did they come from? and would they not, most likely, have been known and heard from?

A few years since the disease of horses, known as the slavers, was suddenly introduced and became general, and was brought on in some instances, even in winter, by the horse eating second cress or rowen hay. At the west, it affected the hogs, and even geese; almost every man had his cause for it, viz: Indian tobacco, lobelia, &c., &c., plants always known to grow. Some pastures would produce the difficulty, others not. At the west, some charged it to clover! It has entirely disappeared. My opinion then and now is, that it was produced by an insect, which affected the salivary glands. At one period of several years it was quite an evil. It first appeared, suddenly, about 1802 or 1803. I will make further inquiry respecting the bug, and by a note in the paper endeavor to obtain information from other sections, and will give the result.

I hope your Club will be able to gain more general information respecting it, viz: whether this is its first appearance on any stage. Our potato crop will be very small in this vicinity, not enough to supply the inhabitants. From May to the last of July we had little or no rain, and we suffered from this drought very much. We then had a fine rain; I have seen many hills pulled, and the potatoes like musket balls in size. Our hay crop is light, say not two-thirds of one. Oats light crop, but well seeded. Corn crop is quite light. Fruit crop short and not of usual size. Our pastures are dried up, and cannot recover this season; little or no second crop of grass.

I am, sir, respectfully yours,

RICHARD BACON.

HENRY MEIGS, Esq., Sec'y of the Farmers' Club, N. Y.

* Mr. Van Wyck observed that in the earlier stages of the potato rot, when everybody, learned and unlearned, scientific and practical, were busy in collecting facts that bore any relation to the disease, and spreading them before the public to aid in finding

out the cause and cure, a few agricultural associations in Holland and Germany prevailed on two professors from universities in each of these countries, to endeavor to find out the cause, when the remedy could be more easily discovered. The two gentlemen selected were among the most eminent for their knowledge in every department of natural history. They entered most assiduously on the duties of their commission; they labored nearly two years in making investigations and experiments; traveled through Holland and considerable part of Germany, wherever the rot had prevailed to any extent and violence; examined all concomitant causes that could have an influence in producing the disease, such as weather, soil, tillage, insects, &c.; made many analyses, and finally concluded that insects were not the cause, and had nothing to do with it. One of them thought it was owing to the weather or atmosphere. The other not so decided; he had his doubts on this last. Still, as many learned and wise men have been mistaken on this mysterious subject, these may have been, too, and ultimately made to appear so, and Col. Houghton's theory prove to be the true one.

Mr. Francis Bonyngé was introduced to the Club by the secretary, as being recommended by our Minister to England, Abbott Lawrence, and by Professor Henry, of the Smithsonian Institution, for his able practical knowledge of the culture of tea, he having passed fourteen years in the East and raised tea himself there.

Mr. Bonyngé said that he had no doubt that the climate and other circumstances of the United States, render some of it as favorable to the tea plant as China. He had looked through the country, this side of the mountains, and judged that the soil and climate of Georgia were best adapted to it. He is perfectly aware of the great difficulty of procuring from the East proper tea nuts for planting, or proper plants for setting out, and can obtain what he wants. He had a tea plantation in Tartary, in north latitude 27 deg. His crop of tea was commonly 1200 pounds an acre of green leaves, which made 300 pounds of tea when cured. Sometimes he got 480 pounds of tea from one acre. One good hand

picks about sixty pounds of the green leaves in a day, which yield when cured fifteen pounds of tea.

Dr. Antisell remarked that the culture of tea seems to be a question of human labor very much. The climate is known to be favorable, but the cost of labor in this country is so great as to hazard its success. Tea is a camellia. It has been found profitable under circumstances to pick rose leaves and bring them to a market; so may it be with good teas. I move that the thanks of this Club be tendered to Mr. Bonyngé for his communication. This motion was seconded, and unanimously carried.

Professor Mapes moved that the next subject for the consideration of the Club be, the best modes of preserving vegetables in winter.

Mr. Nash moved to add, and fruits; carried. The club adjourned.

H. MEIGS, *Secretary.*

FARMERS' CLUB, }
Sept. 7, 1852. }

Nicholas Wyckoff, of L. I., in the chair. Henry Meigs, Secretary.

Present—Dr. Enderlin, Dr. Wellington, Dr. Carpenter of Monroe, and others.

The chairman announced the subject for discussion, viz: The preservation of vegetables and fruit during winter.

The following communication from John Bullock, Esq., editor of the *Artisan*, was read:

NEW-YORK, *September 6th*, 1852.

SIR—A few years ago I had business connexions with several persons who were making experiments as to the best mode of preserving fruits and vegetables. The theory upon which they were all working was, that if the articles to be preserved, were kept at an even temperature of about 33 or 34 degrees above

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zero, Fah., that they would keep for a long time. In practice, however, we found that most kinds of West India fruits would not be preserved at that temperature. The pine apples turned black in a very short time. We also found that those fruits, meats, and vegetables which were preserved, would, when brought out of the preserver, decay and decompose with great rapidity. It would seem that, when nature's course is arrested in its operation, she is simply gathering strength to carry out her purposes with increased power, when the restraint shall have given way.

Messrs. Coleman & Stetson, of the Astor House, in this city, have in use a fruit preserver of Kephart's patent. It is a large room, or ice house, with the ice resting on the top, and the cool water from the melting ice running down the sides. The thermometer will range in it from 35 to 37, Fah. The ice has only to be applied once a year, a sufficient quantity being put on in one winter to last till the next.

I regret that I shall be unable to attend the Club to-morrow, but I must be at the State Fair.

Very respectfully,

JOHN BULLOCK.

H. Meigs, Esq., Secretary Farmer's Club.

The secretary adverted to the numerous methods tried to preserve fruit and vegetables—such as the sweating of apples, and then putting them in single layers on shelves of the fruit room; 2d, in the same way, but covered with canvas of a light kind, which should be dried occasionally when moistened by the fruit; 3d, in close drawers, one or several layers deep; 4th, in dry casks, without anything, but they must be picked over in a few weeks carefully, the casks made perfectly dry, re-filled, and headed up, and not disturbed till wanted for use; 5th, in garden pots of large size, boxes, casks, or jars, with pure and dry sand between the layers; 6th, in jars, in which no sand or other thing is put, the mouths of the jars covered with pieces of slate, and the whole buried in dry sand some inches below the air; 7th, in a dry, airy loft, with a covering of straw sufficient to keep off the frost; 8th, in baskets lined with straw; 9th, in close cellars, light excluded, for it is very injurious; 10th, in dark but airy

vaults; 11th, on a small scale, under bell glasses cemented down air tight, and this not on wood the least resinous, or the flavor is injured greatly; 12th, buried in boxes, each on four bricks, under other boxes inverted, and all buried so deep that the upper fruit shall be from one to two feet below the level of the earth; 13th, pack it in threshed grain, or in straw stacks; 14th, lay it on wheat straw without any covering; 15th, put in wheat or oat chaff; 16th, in flaxseed chaff; 17th, in pulverised charcoal; 18th, in dry fern leaves. These methods are tried as well on pears as apples. We should observe that the wiping of fruit is injurious. Their skins are covered with a secretion called *the bloom*, which, though more conspicuous on plums, is nevertheless on all fruits; its use is to protect them from the ill effects of moisture. Some know this and never touch the fruit; they gather it by its stem only. Light is very bad for fruit when gathered.

Chairman—My practice is, on long experience on my farm, to pit my vegetables in preference to putting them in my cellars. I make a pit a little above the surface of the soil, make a pile of vegetables, then put over it two or three inches of straw; over that put on earth a foot thick, make a hole in the top by means of straw led up to and out of the top of the pile, and dig a drain around the pit, which carries off the water. I choose a southern slope on my ground for these pits. The hole in the top carries off what vapors arise from the vegetables. In very cold weather I stop that hole up. I cover my potatoe pits deeper with earth. The carrots, beets and parsnips, require less care as to frost. When spring comes warm enough to make vegetables begin to sprout, they should be taken out of the pit. I suppose that apples would keep in such pits.

Meigs—Suppose these pits to be covered with two to three feet of earth, would the vegetables sprout? Probably not, or at any rate, not till much later in the season. And is it not as essential to avoid bruising the vegetables as it is the fruit. It is monstrous to behold the millions of bruised fruit and vegetables brought to our markets and lost. Eggs do not require more care in handling than our good fruits! Vegetables also demand great care if they are to be kept in perfectly sound condition.

Chairman—The vegetables in my pits keep solid and sound, but in cellars they wilt and wither more or less, and become of inferior value. Certainly neither fruit nor vegetables ought to be bruised. They are treated abominably by many people; they don't seem to understand the nature of them.

John Jenkins, of Monroe, in Orange county, sends Farmer's Club, by Dr. Carpenter, of Monroe, some new apples from his orchard, and also some new plums, requesting the opinion of the Club as to their quality and names. The apples were examined, tasted, pronounced—of about the size of the Baldwin apple, of a light wax color, juicy, tender, thin skin, very pleasant flavor. The members of the Club, not recognising this apple, unanimously voted to call it the Jenkins Summer Pippin, on motion of Alan-son Nash, Esq. The plum also, not being known, was named the Jenkins Fall Plum, it being late in maturing.

Mr. Jenkins says that the tree which bears the apple has been bearing every year for the past six years; that the apples ripen about the 20th day of July, yet some may be found good on the tree in October. The tree is of a strong growth. Grafts of it can be had of Mr. Jenkins, at Monroe, Orange county, near the Monroe station, on the Erie railroad. The plum has been in his orchard about fifteen years, always healthy, heavy bearer; never heard a name for it from any body; ripens late, and is fine when ripe. The tree is never plagued with the black knot, nor is the plum ever stung by any insect so as to injure the crop.

Dr. Wellington was asked several questions, which he answered.

Mr. Nash—What is your soil?

Dr. Wellington—Subsoil a blue gravel; no limestone; a granite ridge runs through it.

Mr. Nash—Your native grapes ripen well, you say; how is it with your Isabellas and Catawbas?

Dr. Wellington—They are natives, but do not often ripen with us.

Mr. — spoke of the room in which Messrs. Coleman & Stetson preserve their provisions, which is beneath a large deposite of

ice, which lasts through the season. They are quite successful in preserving fruits, vegetables and meats.

Dr. O. H. Wellington, of 184 Twelfth-street, New-York, a native of Lexington, Mass., asked how much ice was stored there to last through the season, and stated that he had understood, from the experience of Mr. Tudor, of Boston, that a cube of 12 feet was the smallest body of ice that would keep well with the usual precautions for its preservation. He remarked that Mr. Tudor had had a very large experience in the preservation of ice, and also of some kinds of fruits, especially of the Baldwin apple, which he and others have been in the habit of sending to the West Indies, New-Orleans, South America, and even to Calcutta. The apples were packed in barrels, each apple being rolled in paper, and the barrels embedded in ice in the hold of the vessel.

Messrs. Nash, Meigs, and others, questioned the Doctor closely as to the results of his observations on this mode of exporting and preserving fruit, and also put questions on the kinds of fruit, care of trees, character of the soil, &c. The conversation took a somewhat wide range, by which the following ideas were elicited from Dr. Wellington :

Of all the apples raised in the vicinity of Boston, by far the most popular is the Baldwin. This finds the most ready sale, and is the one selected for shipping. It is esteemed important that all the apples be picked by hand, whether for the market at Boston or for shipping, and with those who take most care, no apple which has fallen to the ground is allowed to be placed with those gathered from the tree. Great care is taken that no one be bruised in transferring from the basket to the barrel. If the apples are not generally fair, they are spread upon the ground and carefully assorted, so that those sold as the best shall be large and fair.

If designed for shipping, the apples are usually gathered somewhat earlier than when designed for the market at Boston. When perfectly dry they are assorted, and each apple rolled in paper and packed in dry, clean barrels, and placed in the ice as stated above.

When questioned as to the result of the operation, Dr. Wellington

ton remarked, that as they had continued to ship them for the last ten or fifteen years, he presumed it had proved a source of profit. He had also heard that apples shipped on several different occasions arrived in good condition. An evidence of the result, however, was to be found in the fact that after they had been shipped for ten years, he had known the shippers to pay \$3 per barrel for all the apples picked from the tree, large and small, and the purchaser to assort and pack them. This would not have been done if the operation had been attended with much risk. Sometimes they had been sent without rolling in papers. He could not tell whether they arrived in as good condition when sent as far as Calcutta as when sent to a nearer port, but understood that the investment paid well. The shipment of the apples was only secondary to the ice business. The ships in which they were transported have a false lining throughout, inclosing a quantity of tan, sawdust, or pulverized peat. He had never seen a ship lined, but thought that peat mud which had been exposed to the action of a winter's frosts, after being thrown out, was considered as good as anything for filling the walls of an ice house. The buildings constructed for this purpose are double-boarded on all sides, leaving a space of about 16 inches, which is filled with the pulverized peat, rammed close.

In some of the ports, houses are constructed for storing the ice on its arrival; in others, the Dr. understands that the vessel is detained until the ice and apples are sold. In these experiments, as in most others for the preservation of fruits and vegetables by cold, they decay rapidly when taken from the ice.

Dr. Wellington related a few other facts with regard to the preservation of fruit. The autumn of 1835 was remarkably mild and open, and there was a large fall of snow the last week of November, before the ground froze. In different parts of his father's orchard, apples which had fallen to the ground and were covered with the snow, remained in a perfect state of preservation.

A neighbor of his father had a large pile of apples covered by this same fall of snow. In the autumn these had no value but

for grinding into cider. But when uncovered in January, they were found in so good a state of preservation that many were selected and brought a fair price in the market, which would not have been saleable in the fall. Yet these had lain in the same pile with defective ones nearly two months.

His father is now in the habit of preserving choice apples, Bartlett pears, &c., in his ice house, at Lexington, days and weeks beyond the time it would be possible to keep them without, and by this means, a larger price is obtained. The same is practiced by others, and, he thinks, by some who supply this market. But the result of the Dr.'s observation, after careful notice of some years in each city, has been a conviction that fruit has been gathered and transported with more care in Massachusetts than about New-York, and he thinks the farmer is best paid for this extra care.

He stated the experience of the late Rev. Daniel Marrett, of Standish, in Maine, and others in keeping apples by spreading them in a tolerably dry cellar, which never freezes. The apples should be spread on boards about six inches thick, and bins may be made, one above the other, leaving a foot or more of air above the apples. The Baldwin kept in this way is reddened and much improved in appearance. Mr. Marratt and his son have kept their apples in their cellars in this way until they would command a higher price in the spring, in the markets of Portland and Saco.

In answer to repeated questionings, the Dr. stated that his father (on whose place he had made most of his observations,) raised a few hundred barrels of apples, more than four-fifths of which were the Baldwin. An uncle, on a farm adjoining, raised still more. They were in the habit of carefully ploughing their orchards every year, and dressing with manure, even where little else was raised but fruit. They usually purchase hogs on purpose to consume the wormy fruit which falls from the tree, and lighten the ground about the trees. All the apples are picked by hand, for which they pay 10 or 12 cents per barrel, assorted with care, and no bruised ones ever knowingly put in a barrel.

The trees are scraped, some washed with a preparation of lye, &c., and trimmed with care, though circumstances have prevented this being done to as great an extent as Mr. Wellington himself deemed desirable.

The orchards are on a northern slope and have suffered very little from cold winters. A few years ago, when many in that vicinity having trees on a southern slope, lost a large proportion of the trees, Mr. Wellington lost only one or two.

The subsoil is a firm blue gravel, without any mixture of clay, and uncommonly valuable for roads. Those in that vicinity built of that material, which is found in parts of several towns, are remarkably good. To obtain water about these orchards, wells have to be dug 28 or 30 feet. The greening and pippin have been engrafted some, but within the Dr.'s observation, the experiment has not been sufficiently successful to have them introduced much.

Van Wyck.—Our meeting to day, I think, will be considered a useful one, from the quantity of valuable information obtained from it. Our subject, the best way of preserving fruits and vegetables, is important for our country at large. The scientific and practical farmers from Massachusetts, Long Island, and Orange county, New-York, and professional and practical men of New-York, all have given their views freely, in a social conversation, on the subject. Our chairman has thrown much light on the best way of preserving vegetables in winter, and Dr. Wellington, originally of Boston, or near it, has detailed with clearness the manner of managing fruit, and especially the apple, in this region. His friends who are engaged in the business, have enabled him to observe minutely and give a correct report on all the operations of gathering, preserving, and sending to market, near or far, America, Europe, Asia, &c., this valuable fruit, the apple, and in what way it pays and keeps best.

The Baldwin apple, he thinks, has the preference in and about Boston, for preserving, profit and beauty. Dr. Carpenter has presented us, from Mr. Jenkins, of Monroe, Orange county, a basket of fine apples and some plums; the former ripe, of good size, high

flavor and beauty ; the latter not yet ripe, but large and handsome. He has cultivated them about fifteen years, and they are never disturbed by insects or disease. Councillor Nash, of this city, originally of a different section of Massachusetts, from Dr. Wellington, fully confirmed all the latter stated, as respects the soil and climate of the old Bay State, for producing fine apples of every variety, as well as many other fruits, and the great improvements its people had made in the cultivation of these. Much valuable information has been elicited in the subject, by the free interchange of remarks and pertinent questions asked by these gentlemen, the one of the other.

Mr. Nash—Our native grape vines are as plenty as grass, and many are fine in their chosen localities, but it is impossible to make plants flourish out of their proper position and latitude ; their natural climates. Apples love high lands, cool mountain breezes, clean air ; and they never fail to show it in their fair, full, smooth and lovely apples ; and they love the northern slopes of our northern high lands. It has been found that when the apple trees on the southern slopes have been almost destroyed, those orchards on the northern slopes have not lost a half dozen.

Prof. Mapes, absent at the State Fair, ordered to be laid on the table specimens of the native lupin of California, timothy grass and barley. The lupin is small, the timothy large and coarse ; the barley ear provided with remarkable spines.

Jared L. Moor, absent at the State Fair, ordered on the table three flower roots, sent by a correspondent from California, who says of them as follows :

SAN FRANCISCO, July 15th, 1852.

JARED L. MOORE, Esq., New-York :

My Dear Friend—I take the liberty to send to you, by the kindness of Wm. G. Wood, Esq., three bulbous roots, for the American Institute, to try the experiment of their growing at the north, which please present with my compliments. They were presented to me yesterday, by Dr. L. Hubbard and my late law partner, L. D. Brown, Esq., who procured them on the coast range of the Trinity mountains, some 500 miles north of this place, in

the region of snow, about 1,300 feet above the level of the sea, in lat. 40 deg. 20 min., long. 122 deg. 30 min. west.

I know not if botanists have classed or named them, but the Dr. and M. B. represent the stalk as about five feet in height, and the flowers of the same germ, but varying in hue, one a pure white, one a pale cream color, and the third snow white, dotted cochineal, in length varying from 10 to 16 inches, and bending over like a warrior's plume; in fact they called the flower "Murat's Plume," and describe it as by far the most magnificent they ever saw. Wishing they may not get the "Panama fever" on the way, and may live to exemplify to you some of our mountain glories,

I remain, with great regard,
Your ob't friend and servant.

The secretary quoted Lindley's Vegetable Kingdom.

APPLEWORKS.

By the term *wort*, he means any plant; there is a close alliance between these appleworks and the rose wort; the fruit of each in always a *pome*; examine that of a rose and see how close the similarity between it and the apple. The appleworks, consisting of the apple, pear, sorb, medlar, quince, service, rowan or mountain ash, are all found plentifully in Europe, Northern Asia, the mountains of India and in North America; are rare in Mexico, unknown in Africa, except on its northern shore, in Madeira; one solitary species at the Sandwish islands, in north latitude, (in Pacific ocean) 20 degrees; and is not to be found native anywhere South of the Equator.

Mr. Meigs read an extract from Sir John Sinclair, correspondence, &c.

Frederick the Great was certainly a most extraordinary character. When the government of Prussia devolved upon him, it was a small, inconsiderable and disjointed kingdom, without arts, industry or riches; he raised it to be a great, compact and flourishing empire. He taught his subjects industry, improved their agriculture as the foundation of national prosperity. He gave for improvements, in all branches of it, fifteen hundred thousand dol-

lars per annum ; and when reproached with such a waste of money, he replied, it is manure spread upon the ground to secure a more abundant harvest. He also greatly encouraged manufactures, arts, and commerce. Notwithstanding his tremendous military deeds, he left his country vastly improved, and he left sixty millions of dollars behind him in the treasury.

Mr. Meigs—Ffteen hundred thousand dollars a year for agriculture! How much a year has the United States expended for the encouragement of agriculture? Have they answered the begging of Washington fifty or sixty years ago?

The premiums given in the year 1851, by all the societies and governments of the United States for the promotion of agriculture, do not amount to the thirtieth part of Frederick's annual appropriation, made a hundred years ago ; and yet the authorities, both state and national, all know how greatly the main crops of our country have fallen in yield, and are every year yielding less, as a general fact.

Mr. Meigs read the following extracts from the Transactions of the Royal Agriculture Society of England, vol. 5.

INSECTS INJURIOUS TO CROPS.

Mr. T. G. Clithero observed, that in the neighborhood of my native place, in the county of York, is a rookery, belonging to Mr. Vavasour, Esq., of Weston, in Warfdale, in which, it is estimated that there are ten thousand rooks ; that one pound of food a week is very moderate allowance for each bird, and that nine-tenths of their food consists of worms, insects, and their larvæ ; for, although they do considerable damage to the fields for a few weeks in harvest, particularly in backward seasons, yet a very large proportion of their food, even at the seasons, consist of insects and worms, which (if we except a few acorns and walnuts in autumn) compose at all other times, the whole of their subsistence.

Here then, if my data are correct, there is the enormous quantity of 468,000 pounds, or 209 tons of worms, insects and their larvæ destroyed by the rooks of a single rookery, in one year.

And more of the birds. The crop of a pheasant is found full of wire worms. The lapwing eats 100 a day.

Experiment on an acre with the following manures, and the results by Right Hon. Thomas Pemberton Leigh, of Kent.

WHEAT.

			bush.	gal.
No. 1.	30 cart loads barn yard manure,	£4 10	40	6
" 2.	Peruvian guano,	2 4	40	6
" 3.	Rapedust,	1 12 6	38	3
" 4.	Urate,	1 12 6	38	5
" 5.	Super-phosphate of lime,	2 4 9	53	5
" 6.	No dressing,	0 0 0	29	2

The Club unanimously ordered the murat's plume to be put in the charge of Peter B. Mead, Esq., for cultivation, and one of the Jenkin's summer pippins, also that he may have its imitation by the Mr. Glover.

The subject for next meeting. The introduction to our gardens and farms of new and useful plants. The club then adjourned.

H. MEIGS, *Secretary*.

September 28th, 1852.

Rev. Joseph Carter, of Brooklyn, in the Chair. Henry Meigs, Secretary.

The secretary read the following extracts and translations made by him. The one I am about to read was made last June, from the *Revue Horticole* of Paris, June. This work is, with other valuable periodicals, regularly received by the Institute. A brief translation of the article appears in the *London Farmers' Magazine* for the present month, September. The article is interesting as it relates to a new species of potato, which, on trial, so far, seems free from disease.

Revue Horticole, Paris, June, 1852.

POTATO FROM MEXICO.

Last September I received, as President of the Agricultural Class of the Society of Arts at Geneva, a communication which

much excited my curiosity. I was assured that the cultivators of a village called Ferrieres, in the Department of the Ain, at 12 kilometres from Geneva, having a friend in Mexico, had received from him some original wild potatoes, which they had now cultivated for two years. That they appeared to be free from disease in the midst of the diseased ones in that commune, all of which were attacked except these New Mexicans. I went immediately to Feniers, accompanied by my friend and colleague Charles Martin, the eminent cultivator. They confirm the report which we had received. The proprietor who had received the potatoes from Mexico, Mr. Javot, died some months ago. The crop of the preceding year had been divided among his heirs. Other farmers had planted some of them in 1850 and 1851. The tubers had been sent from Mexico, in the hope that they would not have the malady. They had been obtained by Indians in the woods and mountains. On cultivating them at Fenieres, they proved to be small, but of a good taste, and absolutely free from disease, while all other potatoes of Fenieres were lost. We were impatient to see these new plants, I especially so, for I am engaged in writing on the subject of the *Solanum*. We visited the field where they were growing. This was from 2,000 to 2,500 feet above the level of the sea. In this field were our common potatoes side by side with the Mexican, in order that the comparison might be easy. The common potatoes were chiefly diseased (Sept. 2d) while the Mexicans were in full vegetation, their stalks vigorous, of an intense green, the stalks had distinct swellings at the foot of the leaves, the flowers were much larger than those of our old potatoes, of a lively reddish violet color. We pulled up a stalk. It had numerous egg-shaped, roundish tubers, as large as a walnut, not yet ripe. I compared it attentively with an ordinary potato. It was impossible for me to discover any difference in the leaves, flowers, in the calyx; but other characteristics led me to regard the plant of Mexico as belonging to a distinct botanical species. The principal mark was the swelling of the stalks below the leaf, and the plant grows taller and its leaf sharper at its point, flowers larger and of a more lively red than our ordinary ones. When I came home I examined my books, and I saw that it might be referred to the *Solanum Verrucosum* (watery potato) of

Schlechtendal—a figure of it given in the Hortus Halensis. The plant in the garden of Halle came originally from the mountainous regions of Mexico. It shows the same pointed segments and the same nodosities, (knots or warts). The flower is bordering on blue, and not on the red, stalks more straight, and taller. On the whole, I am convinced that it is specifically the *Solanum Verrucosum*, and not *tuberosum*.

The Fenieres field lay covered with deep snow from the beginning of Nov. until spring, when they were dug up and were all sound, while all the common ones of the country were diseased. The medium size of the Mexican tubers was about one inch in diameter. Others were nearly an inch and a half in diameter by nearly two inches long. They were generally, spherical, skin smooth, of a clear yellow color, flesh colored about the eyes, the flesh of a very marked yellow, which seems to be a special characteristic of it. When boiled they have an excellent taste, no bitter in them—a circumstance in which they differ from many wild kinds of the *Solanum Tuberosum*. They taste like our early potatoes, which are not mealy. The starch in them is 145 to 155, while in our ordinary potatoes is 200 to 250.

The celebrated botanist Clusius has given us a drawing, of an excellent character, of the potato, which had been introduced into Spain and Italy in 1588. We there see, that after some years culture in Europe, and, probably, after a great number of years cultivation in America, a plant yields about fifty potatoes of about two inches diameter, oblong, and of reddish color. They ripened at Vienna, in Austria, but not before November. A few years later Raleigh brought some from North Carolina to England. One of his officers by the name of Thomas Harriott had charge of them. Unhappily, no drawing or description of the plant was made by him. One plant of the Virginia potato was drawn and described by Gerarde in 1597. He draws the tubers as being very small; the plant seems to be drawn at the time of its flowering.

From these facts we may fairly hope to find the potatoes of the *verrucosum* become larger by continued culture, and also earlier in ripening than is common to other plants on cultivation.

As to the possibility of shielding the potato from the malady we must be permitted to doubt, and for the following reasons :

We received, in 1849, from the gardens of Germany, another species of *solanum*, which had been brought from Mexico. M. Klotzsch hastened to decorate it with the title of *solanum utile*, (the useful potato,) and the following year the *Botanic Gazette* informs that in the garden of the Institute of Eldena this species had the malady.

The *solanum demissum*, introduced from Mexico into the garden of the Horticultural Society of London, was also attacked by the malady, even in the first year. It is true that another plant of the same lot, reported by Dr. Lindley as being a *solanum verrucosum*, remained sound. We infer that this sort is really more robust; our experience of the two last years make us think so.

Unfortunately, when we cultivate the potato for the market, we feel obliged to manure well, in order to get as large a crop as possible; so the tubers augment in size, but the physiological harmony of the species is destroyed. An excessive production of starch in any plant, like a great increase of fat in an animal, becomes either a direct cause of disease, or, at least, an indirect cause of debility, of certain organs, and the disease of the potato seems to prove what I advance. The malady prevailing at the same moment in different climates, it is difficult to believe that it is owing to any local causes or to external physical causes. The humid climate of Ireland bears no similarity to those of Spain or Russia; and the climate of Switzerland is entirely opposite to that of Holland; but the malady declares itself everywhere within the last six years. For a disease so general I am forced to find some general cause, independent of climate; a cause either direct or indirect, no matter which, provided it be general.

And here is one of the causes: The *solanum tuberosum* (all travelers say) grows in sterile lands, often among the sands and pebbles of a sea shore. We put it into fertile soils and force it with manure. For fifty years past we have diminished our fallows and increased our manuring. This regimen is so contrary to the primitive condition of the potato that it cannot be without

its effect. It does not require so many general causes in the animal kingdom to predispose them to hereditary disease. Observation on human families show that four or five generations constantly subjected to a regimen either too poor or too rich, produce a characteristic tendency to certain maladies of natures opposite to their condition. Vegetables suffer under like laws.

It is proved that the *solanum tuberosum* grows spontaneously in Patagonia and Peru, principally on the western coast of that vast extent of country. On the other hand, it is doubtful whether that species (the *tuberosum*) exists in Mexico, for all the potatoes obtained from the latter are of a different species. Dr. Lindley thinks otherwise; but the absence of the spontaneous *tuberosum* in Mexico is in full accordance with the assertion of Mons. de Humboldt, that the ancient Mexicans never cultivated the potato. On the other hand, how did the native Indians of Carolina and Virginia, in 1588, if they had not obtained it, either wild or cultivated, from Mexico, their neighbors? Here are some irreconcilable things. Either the *solanum tuberosum* was spontaneous in Mexico, or, if cultivated there, it must have been originally from the chain of the Andes. So it is not surprising that it should have been cultivated in the southern part of the United States before the settlement of the Europeans, &c.

ALPH DE CANDOLLE.

Farmers' Magazine, London, August, 1852.

THE POTATO DISEASE AND THE BEAN MALADY.

All experiments on it, up to this time, have hardly established one single fact tending to a settlement either of its cause or its cure. The facts are these: The potato is attacked when nearest its maturity; it sometimes appears to begin, as a rule, in the south first, then in the north; sometimes shows spots on the leaves, sometimes upon the stems, as if sulphuric acid had dropped from the clouds; occasionally it attacks the tubers first; sometimes a single field is attacked and all swept over, as if blackened by an October frost. This has usually happened at the north, about the middle of August, and was always accompanied by a peculiar misty, suffocating vapor, not frosty, but rather hot, and in three days the whole breadth of the potato district was one mass of putrefaction.

The celebrated Irish potato commission, which was appointed by the late Sir Robert Peel, is only a monument of the impotence of scientific research; it ended in a farce and an abortion. We have tried all, and thought we staved off the disease sometimes; the anti-septic power of charcoal availed us nothing. This shows us that there must be a difficulty in imagining how a merely ammonical state of the atmosphere could in any way effect potatoes immersed in dry charcoal! We have imitated the conditions in which the potato escaped without success. In the fall of 1851, our potato plants were all free from even the appearance of taint, but after the potatoes were dug, carefully sorted, dried and put away, they were attacked by the rot, and before Christmas five-sixths of them went off.

Of the bean disease we know even less than the potato. It is a plant most subject to climatic influences.

PRIZE FOR AN ARTIFICIAL MANURE

The Royal Society of England and Wales has agreed to offer a premium of one thousand pounds and their gold medal, for one equivalent to guano.

By the documents before the House of commons, the guano deposits are estimated at twenty-seven millions, twenty-four thousand four hundred and ninety-three tons.

Various seeds put up in layers covered with soil in a moist state—in boxes well packed so that none can move—are imported from America into Scotland, in a better condition than in any other way. The boxes of deal 3-4 inch thick and about 14 inches diameter. The seeds so brought grew freely while those in paper, cloth, &c., were found slow in growing and few of them.

Fowler of Bristol has invented a draining plow which would have formed the most remarkable feature in the agricultural department of the great exhibition—but for the American reaper. Surprise takes hold of all who behold two horses at work by the side of a field on a capstan, which by an invisible wire rope, draws towards itself a low frame work, leaving but the traces of

a narrow slip on the surface. You pass to the other side of the field and you will see that the machine has drawn after it a string of pipes which still following the plow's snout, that burrows all the lime four feet under ground, twists itself like a gigantic red worm in the earth, so that in a few minutes, when the framework has reached the capstan, the string is withdrawn from the neck-lace and you are assured that a drain has been thus invisibly formed under your feet. One of these drains was laid open for inspection—the drain pipes were found to be laid straight, in close contact and perfectly joined. The patentees have, in March, April and May last drained 2,000 acres on the estate of Lord Portman, Mr. Oakley and others, at a cost of from twenty five to forty two shillings per acre without tiles—by the old mode the cost was from £3 10s to £5 10s.

Sir Anthony Fitzherbert's Book of Husbandry, 1532. He was an admired practical farmer for forty years. He says to young gentlemen, rise early in the morning, for sanat, sanctificat et ditat surgere mane, early rising will make you healthy, wealthy and holy.

Transactions of the Royal Hawaiian Agricultural Society. Pamphlet. Pages 125 Oct
August 1861, Honolulu.

(From J. F. B. Marshall, of Kauai, one of the Vice Presidents.)

The annual address by Hon. Luther Severance is worthy of the great cause of Agriculture and will be read with great interest by all its friends.

“Nations are so far advanced in civilization that they have begun to appreciate the dignity and importance of agriculture and to perceive that no branch of science affords a wider field for human research, or one in which patient and scientific investigation may be rewarded with greater benefits to mankind. The road to fame has lain through sacked and ruined cities, and harvests trampled under foot by contending armies. The Poets and historians of antiquity tell us of the heroes who figured in the work of human slaughter—but little of the men who made improvements in tillage or of inventors in the mechanic arts. Archimedes attracted attention chiefly by the machinery he invented to defend

Syracuse. If he invented any labor saving machinery in tillage, the historians of that time have not deigned to mention it. Agriculture and the mechanics arts were abandoned to slaves and menials, throughout the long career of Greek and Roman greatness.

Could old Cincinnatus rise from his grave and see one of the most approved plows of the present day, he might be tempted to use it all the time—and would hardly be satisfied with the limited extent of his farm of four acres.

It would be interesting to know what sort of a plow it was to which the prophet Elisha had hitched his twelve yoke of oxen, when he was called from his laborious vocation to receive the mantle of Elijah. Either the cattle must have been very small or the plow a poor one.

The old Duke of Athel, planted a forest on his estate in Perthshire, 15,593 acres—and when he died he had on it upwards of twenty-seven millions of young trees—his successor set out on poor mountain land 6,500 acres with larches, valuable for ship timber. The land was not worth over twenty two cents an acre. Now with the timber on it, is valued at thirty-two millions five hundred thousand dollars. This statement we take from the letter of Gen. H. A. S. Dearborn, in the published proceedings of the 19th Annual Fair of the American Institute. I recommend an importation of birds to save our corn. Woolen manufactories. Our people must wear wool here. Flannel prevents the too sudden cooling of the body. No clothing made of vegetable texture can ever be equal to that which the God of nature provides, to retain animal heat. The fowls of the air and the beasts of the fields are all covered with permanent coats, but the "featherless biped" man is left to cloth himself by his own ingenuity. He can always vary his covering with the changes of the weather, taking from the sheep, the cashmere goat or the alpacca, the excessive quantity with which nature has provided them.

He speaks of the deserts, once fertile fields, of Babylon, Baalbec, &c., for want of agriculture, its irrigation, &c. He recom-

mends the culture of the New Zealand native flax, *phormium tenax*, whose strength is to that of sisal hemp as nearly 24 to 7, to that of our common flax as nearly 24 to 11 3-4, to hemp 24 to 16 3-4, to silk as nearly 24 to 24. This *phormium tenax* grows on dry or wet land—best on the wet.

He recommends the olive tree and that new variety mentioned by L. W. Tineli, U. S. Consul at Oporto. It is rather a shrub or brush than a tree—growing only about four feet high, little affected by high winds and is a beautiful ornament to a garden.

He recommends planting barley—evidently more common than wheat 3,000 years ago, according to the scriptures, it is admirably adapted to a hot climate. He recommends breeding poultry in the strongest terms. Fences to be made of the cactus—night blooming—whose large snowy flowers are magnificent by night and very fragrant—whose spines are prohibitory of invasion—some stones to be laid for them to lean on.

In conclusion the Hawaiian Orator said :

For the Roman castle let us here substitute the Christian temple, and for the proud and warlike Pagan, a people imbued with a goodly portion of the spirit of the *Great Teacher*, who more than eighteen centuries ago proclaimed peace on earth and good-will to the whole family of man."

Kaempier visited Japan in 1690, remained till 1692.

The cherry tree is used for its blossoms only.

Apricot and plum for both flowers and fruit. By art they have been made to produce flowers as large as roses.

Agriculture perfect. Books upon every subject.

The *Osasjo*—A treatise on the elements of Creation, the Worlds, Heavens, Stars, Comets, Meteors, &c., &c.

The *Mannegojomi*, an Almanack usually eight inches high by five feet in length. Another Almanack for ten thousand years to come. Books of Heraldry—Agriculture, History, National History, Architecture, &c., &c.

A leaning mountain fell over into the sea and under it was found gold dust and sand in equal quantities. Turnips plenty and very large—taste unpleasant to strangers on account of the very free use of poudrette.

Climate delightful.

From Lindley's Vegetable Kingdom.

APIACEÆ UMBELLIFERS

Of which celery, parsley, &c. are part. These have their flow-
on the top of what resemble umbrella sticks, and therefore called Umbellifers. They are called Apiaceæ from the Latin name of parsley, *Apium*. Some of these plants are injurious to health. Among the harmless ones we have celery, fennel, parsley, camphire and the roots of carrots, parsnips and skirrets or sium sissarum. In addition to these, which everybody knows, the following more particularly deserve mention as eatables (esculents). The root of *Eryngium Campestre* and *Maratium*, commonly called Eryngo, is sweet, aromatic, and tonic; much of it is sold in a candied state. The roots of *Meum Athamanticum* and *Mutellina* are aromatic, and form an ingredient in Venice treacle. Angelica root is fragrant, &c. The Laplanders extol it not only as a food but as a medicine also. In coughs and other pectoral disorders they eat the stalks of it roasted in the hot ashes; they also boil the tender flowers in milk till it attains the consistence of an extract. Chervill, an old-fashioned pot-herb, with eatable roots, is the anthesisous *cerefolium*. *Alexanders* (*Smyrniolum Olusatrum*) were formerly cultivated instead of celery; the leaves have a slight and pleasant aromatic flavor. The tubers of the *Bunium Terulaseum* are eaten in Greece by the name of *Topana*. Samphire is one of the best of all ingredients in pickles. *Carum Bulborastum* or English pignut is quite wholesome, as are also the roots of the *Ceanothe*, the *Pimpinelloides*.

Anesorhiza Capensis and *Feniculum Capense* are both Cape esculents. Arracacha Esculenta are inhabitants of the table land of Granada—has large esculent roots resembling the parsnip in quality but is better. Prangos Pabularia, a herbaceous plant, inhabiting the arid plains of Southern Tartary and adjoining pro-

vinces, has a great reputation as feed for sheep, but hardly deserves it. Dr. Royle thinks that it may have been one of the kinds of the Sylphion of the Greeks, described by Arrian (who wrote in the second century) as growing only with pines on Paropamis, where it was browsed on by numerous flocks of sheep and cattle. Lieutenant Burns, on crossing in the direction of Alexander's route, found this in the same place, greedily cropped by sheep, and even eaten by his fellow-travellers. The natives of the north of Asia esteem highly the skinned root of the sweet sub-acrid *Heracleum Sphondylium*.

Assafoetida may be cultivated here. Burns found the plants growing on the mountains of the Hindoo Koosh, where they are regarded as highly nutritious food for sheep.

Oppoponax is the concrete juice of the plant called *Oppopanax Chironium*, which resembles the parsnip, and inhabits the Levant. We should endeavor to grow the sandal wood—(*Santalum Album*)—highly valuable for many uses—considered almost sacred by the East Indian idolators—they burn it as frankincense before their idols. Its oil has been held next only to that of roses as a perfume.

The Quandang tree, of New Holland bears nuts as sweet to the natives as almonds are to us.

Thousands of others may be mentioned, all of which should command the care and growing of this mighty continent, containing, as it does, all the climates and conditions of half a world. If Frederic the Great was here, he would (instead of spending, as he did, \$1,500,000, on his little Prussia, for agriculture alone,) spend a hundred millions to make this half world the wonder of the world for its agricultural glories.

Lauracæ—Laurels—The *laurus nobilis* has aromatic leaves, chiefly used by confectioners.

Camphor of China is obtained from the wood, branches and leaves of the cinnamon trees, in some species of which the roots are so much contaminated with it as, to render it unfit for spice. The camphor is obtained by dry distillation. *Formosa* yields largely

of camphor, which is carried from thence to China, in Chinese junks.

Drupaceæ—From the Greek word *drupetes* or falling fruit, plums or prunes.

The prunes of commerce are prepared in France, out of the plums called St. Catherine, and the green gage. In Portugal, out of the plums, called after the village where they are prepared, guimaraens. They contain so large a quantity of sugar, that brandy is distilled from them, when fermented, and it has been proposed to cultivate them for manufacturing sugar.

The *prunus brigantiaca* has a kernel which yields the fixed oil, called *huile des marmottes*, used instead of olive or almond oil.

Hydrangea—Cultivated from the most ancient times in China and Japan. In the latter, the species called *hydrangia thunbergii*, are dried and used as a tea, which the Japanese, for its excellence, call *ama tsja*, or tea of heaven.

Aquifoliaceæ—The *ilex holm*—The bark yields birdlime. The beautiful white wood of it is highly esteemed by cabinet makers, for inlaying.

This tree is found sparingly in various parts of the world, but is found especially in the West Indies, South America, and the Cape of Good Hope. Several species are in the United States and North America generally, but only one, that is the common holly, in all Europe.

Cardiaceæ *Sebestens*—One of the drugs of the apothecary; are found in the northern and southern tropics, have a brown colored wood, beautifully veined with black, and smelling of musk. The wood of the *cordia gerascanthus* or cypress wood, and Spanish elm, are important. The bark of the *cordia Myxa* is a mild tonic, and its wood soft. One of the best to kindle by friction, and is said to be that of which the Egyptians constructed their mummy cases.

The secretary read from the

London Farmer's Magazine for September, 1852.

POTATO DISEASE.

The earl of Malmesbury, her majesty's principal secretary of state for the foreign department, transmitted to the council, through Mr. Addington, a dispatch from the consul general at Warsaw, in Poland.

Extracts.—Poland has comparatively suffered but little from the potato malady; but it is her important crop, and she is attentive to it. The malady is now ascribed to the presence of too much free ammonia in the lands in which the potatoes are planted, and to counteract it fixed alkalis.* This theory appears so strongly to bear out the view taken at the very beginning of the epidemic, as reported in my consular letter of October 16, 1846, that I am induced to make this statement to your lordship. Dr. Voget, of Heinsberg, in the district of Aix la Chapelle, recommends the simplest method of decomposing it, wherever it is, whether produced in the soil or the manures, to use crude gypsum as a top dressing; or to irrigate the ground with very strongly diluted muriatic or sulphuric acid, in the same way as liquid manures are applied, or before carrying out the manures to mix it with gypsum, ashes, or acids.

GUSTAVUS DU PLAT, *Consul General*.

OSIER WILLOW.

Recent inquiries have been made at the Institute for information relative to this valuable article, with a view to cultivating it for our own market, which has hitherto been, and is now, shipped from Europe.

Lindley, in his "Vegetable Kingdom" says, that of the salicacea, or Willowworts, are nations of the same localities as the British familie, but they grow still further north than the birches. The most northern woody plants that are known, are the willows—*salix arctica* and *polaris*. The order is found sparingly in Barbary, and there is a species of willow even in Senegal.

* Potash and soda are called fixed alkalis, and ammonia the volatile. Potash from the ashes of almost all vegetables. Soda abounds in the mineral kingdom, in sea salt and ashes of marine plants, and also native in the soils of Egypt, Syria, and India.

The willows are valuable trees for timber or for economical purposes. The willow, the sallow and the poplar being the representative of the order. The use of osier for wicker work, of sallow for charcoal making, is well known. Excellent cricket bats are made from the light wood of the *salix alba*; arrows from the aspen, (popular tremons) and various turnery ware.

The name osier is given to several species of willow or *salix*, used in wicker work—chiefly baskets. Osiers differ from salallows in their long, straight, flexible and tough twigs; thin, generally sessile, (leaves with no foot stalks) germens and elongated style, and stigmas. The osier forms a hardy, useful hedge for excluding boisterous winds, for preserving river banks.

Osiers are divided into two classes. The first class is known by its mealy or downy blunt leaves, while the other class has a smooth and more green pointed leaf, much like that of a myrtle.

The common Osier (*Salix Viminalis*—willow to *bind with*.) Any twig to bind with was called *viminalis* by Pliny. The common Osier is one of the most abundant species—is fond of moist situations, banks of streams, meadows, &c. The twigs grow very long, slender, round, polished and downy when young, and have fine silky hairs. The leaves have very short foot stalks, and so may be termed sessile, grow almost upright, are about a span long, and half an inch wide.

There is a variety called the Velvet Osier, in which no external difference is perceptible, but the twigs are more pliant. There are several species as well as varieties comprehended under the name of Osiers. The silky-leaved Osier (*Salix Smithiana*) is found growing in meadows and Osier grounds, the twigs of which are so brittle that they are not fit for basket work. It is, therefore, important to cultivators of Osiers to distinguish very carefully between this and the Velvet Osier.

The Auricled Osier (*Salix Forbiana*) is grown in the eastern parts of England. Stem erect, bushy, upright, slender, smooth, twigs very tough and flexible, of a greyish yellow color, not purple hue; it is highly esteemed, and much cultivated for the finest basket work.

The green-leaved Osier (*Salix Rubra*, or *red*.) is a small tree, with long, upright, smooth, greyish or purplish, more frequently tawny branches. It is very tough and pliant, and is one of the most valuable Osiers when cut down annually. The very long narrow leaves of it agree in shape with the *Salix Viminalis*. It is rather rare. It lacks the dense white pubescence (hairiness.)

In the fens in the east of England there are many plantations or Holts (as they there call them) of Osiers. These beautify the country, keep the stock warm in winter, and provide for basket and all wicker work.

The mode of planting is very simple. They dig the ground to the depth of one foot, and then prick down cuttings of four year's growth, and eighteen inches long, at three feet apart. The proper season for this planting is from the fall of the leaf until late in the Spring, but they seldom fail, if set out at any time.

The Club will be much pleased to receive communications from any citizen who has raised the Osier, and to learn of its extension through our country.

Judge Van Wyck—There is no branch of agriculture, and horticulture, perhaps, more important for our country, and, indeed, for any country, than the introduction and cultivation of new and useful plants. This consists not only in introducing exotic or foreign plants, but in discovering new ones at home. Our country presents a wide field for this last. It is a young country and an extensive one. It possesses a great diversity of surface, of climate and of soil, numerous high mountains, extensive plains, many large, dense forests. The enterprising gardner and farmer, both scientific and practical, could not perhaps employ a portion of their time more profitably than in endeavoring to procure some new plant or new variety from a distance. This ought to be of the grass or grain kind or garden vegetables; some new tree—ornamental or useful; some new fruit or flower. These, or some of them, have at different periods been transplanted from the north to the south and west, and *vice versa*; and, with a little care at first, been acclimated, grew, prospered, and found useful and beautiful in their respective new localities. Exotics, plants of

There is no excuse for this importation, we must grow it. I will make inquiry of those who best understand the cultivation and management of the Osier and report to the club.

Hon. Richard Bacon, of Simsbury, sends a box of wild grapes for examination—which were tried and pronounced excellent for a wild one. It is a very dark color. One berry measured three inches in circumference. Mr. Bacon sends also apples of a very fine form. Dr. Peck said he had known them for twenty years by the name of *Baking Sweets*, they are excellent when baked. Pears also of good flavor.

Mr. Ralph Hall, sent for examination fine native dark colored and some white native grapes which are good. The white one resembles in color the sweet water foreign grape.

The subject of the Osier and new plants was ordered for the next regular meeting on the first Tuesday of November next at noon. The club then adjourned.

L. W. Annan, 810 Greenwich street, exhibited very beautiful seedling apples raised by Mr. Alson Sherwood, of East Fishkill. The tree is a chance seedling about 12 years old, 20 feet high; has on it probably 5,000 apples. Those on the upper limbs white like wax. They are also of pleasant flavor. It bears few leaves in comparison with other trees—almost as many apples as leaves. The apples are about one inch in diameter.

Mr. Annan exhibited also Lemon Clings of very fine kind; also wild grapes of a fine deep wine color.

The apple is to be called Sherwood's Wax Apple.

Ralph Man, Esq., exhibited pears from a tree planted in 1690 by Samuel Hall, at East Middletown once called, then Chatham, now Portland. These pears were picked on the 10th Sept. 1852. They are well grown, handsome yellow, pleasant taste.

H. MEIGS, *Secretary*.

Farmers' Club, November 9th, 1852.

Judge Van Wyck in the chair, Henry Meigs, Secretary.

Present, Dr. Enderlin, the late associate of Liebig, Dr. Underhill, of Croton Point; Dr. Satchel, of Accomac, Virginia, and others.

The Secretary read the following papers, translations &c., remarking that the wisest nations are now busily engaged in naturalizing in their various countries, all sorts of useful and beautiful plants from the most delicious flower to the largest tree. And why shall we not avail ourselves of the products of all soils and climates of the earth, and let all of them become members of our great Union? embracing as it does all climates and conditions for the vegetable world.

Revue Horticole, Paris, Aug., 1852.

NEW FRUITS AND PLANTS.

Laurns Persia or Persea gratissima.

This is a tree of medium size, grows in the West Indies, where it bears the name of the Advocate or Lawyer. The fruit is about the form and size of a pear. The only specimen we have is in the Rautonuet Garden, where it is about five metres or about sixteen feet high—stands near the south side of a wall. Two years ago it bore ripe fruit—the flowers having been artificially fecundated. There is a larger number of them in the experimental garden at Algiers, where they are trimmed into pyramidal forms like the pear tree. They bear flowers and fruit in abundance.

Eriobotrya Japonica, is now common in the gardens of Hyeres (Hyeres is near Toulon) and Toulon. On the 12th of May last, some of its fruit began to ripen. Great quantities fully ripe, were in the markets of Algiers, on the first of August. It is not a fruit of the highest qualities—but it relishes much, succeeding early as it does the preserved fruits of winter. We recommend it for our gardens in the south of France.

Sida Arborea—a hot house bush in Paris, grows freely at Hyeres, some twelve feet high, is covered the greatest part of the year with flowers of great beauty—purple veins in deep orange color.

We recommend it to our southern gardens.

Erythrina Cristagalli. This beautiful plant becomes at the south a large tree. We recommend it to all southern gardens.

Pittosporum Tobia or *Sinense* is now completely naturalized in the Vaux and the mouths of the river Rhone and has become the favorite shade tree of the people there. Mr. Rantonnet raises them in his garden every year by thousands. He has some growing there, as large as cider apple trees, but taller and more elegant a figure. We have seen it covered with thousands of its white flowers—producing a most beautiful effect.

Calycanthus Piæcox produces abundance of fruit at Hyeres and is now entirely naturalized in Province. It does much better in full sun—than in any shade. We may say the same of the *Hydrangia Quercifolia* or Oak leafed *Hydrangia*, which becomes a great, many-stemmed bush, but it prefers shade.

Acacia the broad leafed from New Holland, is now growing in Provence as well as it did in Australia. It has the size and figure of a large pear tree.

Lagerstræmia Indica and *Reginæ* grow about 15 to 17 feet high. It flowers abundantly and beautifully—grows well wherever the olive will. It is readily multiplied by budding.

Poinciano Gilliesii from Chili. Has been many years at Hyeres, is a very ornamental tree for figure and abundant flowering. Merits greater extension.

Solanum Articulatum is growing in the Rantonnet garden, its trunk as thick as a man's thigh. It presents the phenomenon of bearing potato blossoms.

Laurus Indica. We have seen one as large in the trunk as a man's body. It is a very beautiful tree and ought to be cultivated wherever it will grow. It needs a mild winter.

Prunus Caroliniana, do. *Lusitanica*, *Ulnus Sinensis*. These three trees flourish as well at Hyeres as in their native countries.

The latter one, the ulmus or elm of China, is remarkable for having very shining leaves which remain on a long time in all seasons.

Ligustrum Japonicum is a favorite tree in Provence, some of them very curious and ornamental.

Bignonia Manglesii—Of exuberant vegetation, even prodigious thick foliage with beautiful flowers. Excellent to cover walls &c., bears fruit at Hyeres but not abundantly.

Many other new plants are mentioned.

SHADE TREES.

The greatest portion of shade trees suffer in large cities from worms. It is extremely desirable to have trees which are clothed with dense, bright foliage, free from the attack of worms. The Ailanthus has been extensively tried of late years. It seems to be proof against all insects, but is considered by many to be injurious to other plants and unwholesome, especially in the most beautiful season, that of blossom.

We have now commenced with another tree which seems to be preferable to all others for city purposes. It is the Norway Maple, a tree bearing dense foliage of a deep shining green on the upper surface, lighted color below, holds its leaves all summer, and if it is allowed to grow without trimming, it attains great size.

From Lindley's Vegetable Kingdom.

FABACEÆ.

Indigo.—*The dye from it is a formidable poison.*

Senna—Is derived from Cassia Acutifolia, (sharp leaved) from Cassia Senna and from Cynanchum Argel.

Ceratonía Siliqua—Or Carot tree, or Algaroba bean, is fed to horses in the south of Spain; has been exported to England with profit, as substitute for oil-cake. The dry pulp in which the seeds are buried is very nutritious; is supposed to have been the food of St. John in the wilderness; is, therefore, called Locust,

and *St. John's Bread*. Singers are said to chew this fruit to improve their voices. The seeds of the carot tree are said to be the original Carat Weights of Jeweler.

APOCYNACEÆ, OR DOGBANES.

Abundant in the hot parts of Asia ; some in the American tropics—but by no means in Africa. They are generally very beautiful plants, with large, gay, showy colored flowers—in many cases poisonous. One of them, the *Tanghinia Venenifera*, bears nuts about the size of the almond, one of which will destroy twenty men. It was used in the island of Madagascar as an ordeal.

The common Oleander belongs to this class, and is a *formidable poison—little suspected*.

LOGANIACEÆ.

Are either tropical, or near the tropics. A few species are found in New Holland and in America. The *Nux Vomica* is the celebrated fruit. This fatal drug consists of the seeds of the *Strychnos Nux Vomica*, an Indian tree with small greenish white flowers, ribbed leaves, and a beautiful orange colored fruit, round, size of a small apple, has a brittle shell over it, and a white gelatinous pulp.

Revue Horticole, Paris, Sept., 1853.

Artichoke—*Cynara Scolymus*—The culture of artichokes has been long considered by many people as a luxury fitted only for the tables of the rich. This is so, generally ; but in our great centres of population it has become in a considerable degree a dish for our working classes. During the whole of the artichoke season, the hucksters sell them out of their little hand carts all over Paris, from sunrise to sunset. They cut them early in the morning and carry them to the markets, where people go to buy them raw. In the morning they are generally sold (ready cooked) by women who carry them about for sale, on a flat flasket (*eventaire*) at about one or two cents apiece, (5 to 10 centimes, a centime being 1-100th of a franc) according to their size. Working people consume a great many of them daily, because it is one of the easiest vegetables to cook. It agrees well with almost everybody,

and one does not become tired of it, if it is on the table every day, in consequence of the many ways in which it can be cooked. It is eaten (when cooked) with white sauce, with vinegar, fried, with mayonnaise, very good with pepper; in ragouts, raw, or baked dry in an oven. There is no difficulty in the culture of artichokes. They require rich soil, deeply tilled—light and rather sandy. In soils which retains too much water, their roots are apt to rot. To preserve them during winter—cut them off with about ten inches of the stem and set them in a heap of earth, not letting the soil get into their heads. When the cold comes, cover them well with leaves of oak, of plantain, of chesnut, &c. When the weather is mild, open the covering every morning, take out what you want, and cover up again in the evening, to keep out sleet, snow and rain. Be careful and do not tread on or press hard on them, for they soon rot if bruised. Almost all our gardeners practice as we have stated. About the end of April we plant the artichoke quincunx fashion, that is, five in a square—as one at each corner and one in the middle, the squares being about 2 1-2 feet on each side. Moles are very fond of their roots, especially in winter. In France this mode of raising artichokes is almost sure; but, nevertheless, we think it best to state another method, practised at Senlis, where they succeed well. Doublet, the gardener there, sets out his artichokes in the open grounds at forty inches apart every way; between each, he sets out large Milan cabbages. Towards the end of November, or in December, he takes up one row of artichokes out of every two. He then digs out that space, two spades deep, throwing the dirt on each side to the rows of artichokes left standing—so hilling them up, and afterwards covering the tops with straw and leaves, so keeping them (in the places where they grew) until the following months of March or April when he frees the artichokes from the earth and coverings. He then sets out artichokes in the row which he had taken out in the preceding fall. In the following December he destroys the oldest row of artichokes, (now 19 to 20 months old) and the soil where they stood is now used to hill up the new row. The object of this method is to render permanent the culture of them in a field suited to them, and to produce from each plant fruit not only more

in number, but more beautiful. This plan will not do in clayey soils, which retain too much water.

We saw at Senlis a field which has grown artichokes every year for the last sixty years, on this plan, *which is too little known*.

Mr. Doublet's crops give him about five cents for each plant. The plants stand about 40 inches apart, so giving per acre about 1000 plants. The cabbage give him about 1 cent per head.

At Rouen they plant the eyes of the artichokes at about two feet apart, and between these, three rows of Grelot onions, or salads, or radishes of the red sort; and in every vacant spot they set a Milan cabbage. They take up their artichokes in every fall and put them in cellars. In the spring they take off the eyes, or *radons* as they call them—and set them out as before. M. Rouffia, of Paris, who is very zealous in agriculture, informs us that in April or May the gardeners of Perpignan have a method by which they increase the size of the artichoke. It is very simple. As soon as the heads are high enough on their stalks, they put a band of rush around the leaves sufficiently close to cause the leaves to be somewhat pressed over their heads—which being thus sheltered from the sun, become much more tender and larger. We know some amateurs at Paris who use this plan with constant success. Some attempts to force them have succeeded.

In the course of last winter Algeria sent to Paris about eighty thousand artichokes.

Revue Horticole, Paris, Sept., 1852.

LONGEVITY OF SEEDS—NEW OBSERVATIONS.

In our last note on this subject we invited cultivators who have any knowledge of cases, to have the goodness to communicate it to us, not merely to add new evidence to the support of the opinions we have published, but to provoke contradiction and brighten on a subject so interesting both to vegetable physiology and practical agriculture. One of the ablest agriculturists of the west of France—M. Trochu—writes to us to call our attention to facts observed by himself. He states that in 1816 he had sown alternate beds of buckwheat and millet—some six or seven acres.

When the seeds were beginning to ripen, great numbers of birds infested the field, eating the grains and causing much to fall on the ground. After harvest he dug the field up deep with the spade to prepare it for a nursery of forest trees. The surface soil with the seed in it was put at the bottom, and the clay subsoil on top. Twelve years afterwards he took away the trees from a part of this field. This operation necessarily left holes where the roots had been taken out. Soon after this he found the earth about the holes covered with young millet and buckwheat plants—while before this, not a solitary one had been seen for twelve years. He says they had been buried so deep that they could not germinate.

Before this—that is, in 1809—he had broken up a piece of land to the depth of a metre (nearly 40 inches) with spade and pickaxe, to make a fruit garden. The surface soil was put at the bottom, and the subsoil on the surface, so that a multitude of the seeds of rushes and heaths on the field were now buried about a metre deep.

Twenty-five years after that he was very much astonished to see the ground about the holes made to remove the trees covered with a multitude of young rushes and heaths, and now, forty years, these seeds grow abundantly whenever a hole is made in removing a tree. This seems to establish peremptorily that the earth has a power of preserving seeds at a certain depth, for an indefinite length of time.

MAUDIN.

GENERA AND SPECIES OF PLANTS KNOWN AS LATE AS 1846.

1. Tallogens.—Simple structures, no wood, stems and leaves indistinguishable.

A thallus is a fusion of root, stem and leaf into a general mass, Fungus, Lichens, Algæ or Sea Weed, &c.

2. Acrogens.—Stems and leaves distinguishable, such as Ferns, Honetails, Club Mosses, &c.

3. Rizogens.—Sexual or flowering plants. Fructification springing from a thallus, (Oayyos, a green leaf.) The wood of their

stems is arranged in a confused manner, the youngest in the centre, their cotyledons single.

4. Endogens.—Leaves parallel veined. The root is, internally, much like the stem—growth from within.

5. Dictyogens.—Leaves not veined, deciduous, (fall off every year.) Root and wood in solid concentration—circles—a small class. The Yam, Sarsaparilla, and a few more. Aiktoon, a net. Wood youngest at the circumference—Cotyledons two or more.

6. Gymnogens.—From the seeds being quite naked.

7. Exogens.—Growth on the outside. The seeds are inclosed in seed vessels.

The seven classes embrace the whole vegetable kingdom.

The first class—the Thallogen—grows as a Fungus, or an Alga, or a Lichen, according to the peculiar conditions of heat, light or moisture, in which it is placed—producing Fungi or putrid organic beings, Lichens on living vegetables, earth or on stones, and Algæ, when developed in water.

H. MEIGS, August, 1852.

[From Lindley.]

Endogenous Plants.—A primary class of plants. Their stems grow by successive additions to the inside. And they are also distinguished by the veins of their leaves running parallel—no dividing or branching—grasses, lillies, asparagus, &c., and in latitudes large trees, such as Palms and Screw-pines.

Exogenous Plants.—Those plants which grow by addition from without. They are dicotyledons. A transverse section shows the medullary rays from the centre to the bark—fibrous rings, with a woody mass between them. They constitute another primary class into which the vegetable world is divided, and are characterized by the reticulation (net work) of their leaves.

General Chandler exhibited to the members specimens of the Osier Willow, *salix vinunalis*, grown by him from the stock of Mr. Bement, of Albany. He observed that this important osier, the only one which experience has decided to be the very best for

all the purposes of basket making, and every other form in which the osier can be employed, was cultivated several years ago by Mr. Bement. The specimen here presented has been cultivated for the purpose of having an example of the true osier for the examination of all who come to the Institute for information. The foreign osier is sold here at seven cents a pound.

Ambrose L. Jordan—late Attorney-General, of this State, sends to the Club specimens of the true basket willow—nine feet long—grown on his place on the Hudson river.

NEW PLANTS GENERALLY.

Judge Van Wyck, the Chairman.—The introduction of new plants, that is the useful and beautiful, into every part of our country where they will grow and prosper, ought to interest strongly the farmer, planter and gardner. The farmer of the middle and eastern States, knows pretty well what new fruit, flower, or forest tree, he has not upon his premises, and from the best information from experienced individuals; agricultural journals and periodicals, endeavor to procure and cultivate such as would be the most profitable to him. Profit means not only things that can be used for the table, and gratify the palate, like fruits and vegetables, or such trees as can be used as timber, but such plants and trees as produce the sweetest and most beautiful flower, and largest leaf and most dense foliage. These last make the finest shades for dwellings and home-steads and ornament the ground adjacent to them. The eye, now-a-days, must be pleased and gratified, as well as the palate; this increases the value of the mansion farm and grounds attached to it. These reasons will apply with equal force to the planter or farmer of the south. Our gardeners, too, of both sections, north and south, should pay some attention to ornament in laying out these, as well as great attention to the quantity and quality of their products. The French have shown great attention, as much so, and perhaps more than any nation in the world, to the introduction of new, beautiful and useful plants into their country, they have great taste, acuteness and science in everything relating to arboriculture, floriculture and horticulture. In Louis Phillipe's time, which embraced 18 years, they introduced about 15,000 new plants into France, consisting of fruits, trees,

flowers and garden vegetables, and cultivated them with such skill and diligence, as to secure the growth and maturity of most of them. The King embarked in the enterprise and ordered from all quarters of the world, some of the most useful and beautiful plants and trees, and had them planted in the gardens of his estates, where he would give those that required it, shelter or protection from the weather, until they got acclimated. This with the efforts of numerous individuals both before and since Louis Phillipe's time, has added much to the wealth and beauty of France. The nations of continental Europe, have pursued a similar course in a greater or less degree. It was stated at last meeting, when this question was before us, that Great Britain stood pre-eminent in the same laudable enterprise of introducing exotics, or useful foreign plants into her empire. During George the Third's time, 6,750 were imported and cultivated. It is not to be expected that our comparatively young country will enter as extensively into the business as many of the nations of the old world. We have not, as yet, the facilities which capital gives, such as green houses, hot houses, the preparation and working of grounds and gardens for the reception of many of the new plants as they arrive, to protect them from the weather, until they get acclimated. We have done something at it, but we can improve in the system and greatly increase it. We have the example of those who are older in the business than we are, and the great good they have derived from it, as nations and individuals, stimulates us to do more.

Osier Willow.—This has been made a part of one subject, on the ground, I suppose, that this useful plant will not grow well in our country, and some doubt whether the genuine one is or has been here. I believe we have in our country every variety of the willow, useful and ornamental, the most beautiful of all is, perhaps the weeping willow or as it is scientifically called *Salix Babylonica*, we have these in abundance and great perfection, and as it has been stated at this Club heretofore, and proofs given of it; we have the osier for making baskets, &c. To show that the willow of every species requires a wet, moist soil, they do not grow as thriftily nor live as long on high ground, they decay and die sooner. This has been the habits of the plant in all

ages; the terms used to designate it at different periods of the world prove this. The Romans called it *Salix*, the Celtic, after them, called it *Sallow*, meaning, *sal* near and *lis* water, the tree now, is as much known in many places by *sallow* as *willow*. The Roman term *salix* was the root from which all the modern names sprung, the Saxon has it *salix*, the French *saule*, Italian *salico*, Spanish *salec*, all show its thirst for water in all ages and countries, and that this way only to be quenched by a free use of it and being *near* it.

Hon. Richard Bacon, of Simsbury, Connecticut, presented fine large apples from his orchard, which he desired the Club to examine and name the species. The apples were tested by the members.

Dr. Underhill observed that in his opinion they were a variety of the fall pippin. The members concurred in that opinion.

Specimens of the two red pines of California, with their foliage, were on the table and were examined by the members. These specimens were transmitted from California by Andrew Williams Esq., one of the earliest members of the American Institute.

It appears on examination that the annual rings of these two pines are extremely thin, so much so, that one tenth of an inch contains, perhaps, four or five of these rings on an average. One of these pines has its fibres all regularly waving like the curls of hair in some cases. Some of these trees are found to be three hundred feet high and twenty feet in diameter. A tree of that diameter has therefore about four thousand rings—showing how it began to grow about the time when the Egyptians were founding the pyramids. Lindley says that the locust tree of Brazil, is of about the same age—that they were growing in the age of Homer, and were 332 years old when Pythagoras was living. The same age is attributed to the enormous eucalyptus of Australia.

The subject of new plants and the osier willow was ordered for the next meeting.

Mr. Dickey, to whom it was referred to ascertain the commercial state of the osier here—and such information as to its growth and mode of curing—reported that he was not yet ready, but would report soon.

The members were all of opinion that efforts to introduce and naturalize all useful and beautiful plants, was one of the most valuable and interesting objects, not only of institutes but of every State government and of the United States government.

The Club adjourned.

H. MEIGS, Secretary.

Farmers' Club, November 17th, 1852.

Sam'l Griffing, Esq., of N. J. in the chair. Henry Meigs, Sec.

Present, Gen. Tallmadge, Rev. Mr. Fitch, Mr. Shelton, Mr. Dey, the three last named gentlemen recently from California, Judge Van Wyck, of New York, Mr. Dickey and others.

Mr. Shelton presented a collection of seeds and plants, colored drawings of flowers and plants—engravings, all executed under his care by able artists in California. Being questioned by members he replied, that Indian corn, of the southern kind, grows there occasionally to the height of twenty-five to thirty feet, but in such cases yields little if any corn. That the short Canada corn with its ears growing close to the ground—is planted in California with some success—yielding there some fifty bushels of shelled corn per acre. That the changable character of the climate, the hot days and remarkably cool nights, do not appear to suit our great staple, Indian corn. The Canada corn grows there to four and six feet high, the grain is quite hard. The trees near the sea, at San Francisco, assume peculiar forms in consequence of the strong winds rushing inland from the Pacific ocean to cool the rarefied hot air of the interior. The wind has caused the branches of the trees to take the direction of the wind, to render them stunted so that they grow up like chapparal.

Mr. Dey observed that the rainy season commences with November and ends in June. I have passed through the California

valleys. As soon as the rainy season begins, the clover spring up—grow very bushy—are very tender. The Indian Squaws gather baskets of it, they roll it in their hands into balls which they chew and then swallow. I went through the valley of San Jose, it was from seventy to eighty miles in length, and in its widest part about sixty miles. Clover is very abundant, so is wild oats in this valley, that of San Juan and other valleys and the hills also. One of the clovers of a large growth. called burr clover, bearing burrs (about as large as ordinary peas) having the seeds inside—grows over thousands of acres, and when the dry season comes, these burrs cover the ground in numerous places about two inches deep.

Mr. Shelton. I have gathered three bushels of these burrs off eighteen feet square.

Mr. Dey. Drovers of cattle and stock lap it up with their tongues during the dry season, and it fattens them, while no green food can be got by them, everything on the surface being perfectly dry.

Mr. Shelton exhibited a quantity of the burr clover seeds, and his Herbarium. There are fifteen or sixteen varieties of clover there—of all colors and very beautiful. I made splendid bouquets of clover heads only. One of the clovers is somewhat like our red top. There is a striking difference between the vegetation of California and ours here, trees quite different.

Mr. Dey. What we call, in California, the red wood seems to be between red cedar and pine. I saw one of them which measured sixteen feet in diameter and was three hundred feet high. This tree and many others have holes at the base, caused chiefly by the practice of building fires against them. I measured one of them which was entirely solid and it was fifteen feet in diameter.

Mr. Shelton.—I have seen timothy grass there, it is a native. I present some of the heads here. They are smaller than those of the best timothy grown in New-York. I have known from two to five tons of hay to be cut of one acre. I have seen one root of clover tillered out so much as to cover eight feet square, and some

of it attains a height of ten feet. There is a grass there called pin grass, a very curious growth ; it is one of the last in making its appearance. There is also an acid clover, with which a healthy and pleasant lemonade is made. This clover is commonly called sour clover.

Mr. Dey.—There are acres and acres of the burr clover, and also of a phlox, a beautiful flower which covers the ground as thick as buckwheat.

Mr. Shelton.—I weighed one sour clover root, with all its branches, and it weighed three pounds. There grows abundantly a sort of mint, a very fine aromatic.

Rev. Mr. Fitch, from California.—The vegetation of California commences in November, with the rainy season, and begins to dry up in June, and the drought continues until the ensuing November, and generally without dew. It has been said recently that rains fell occasionally in the dry seasons, which hitherto had not been known, so that lately some of the dry fodder had been destroyed.

Mr. Shelton.—I observed that they cut barley sometimes about the last of May, and are in no hurry to carry it in—they let it lay where it fell, in swathe, and kept in perfect condition.

Rev. Mr. Fitch.—Wheat grows well there. General Vallejo told me that he had known one hundred bushels raised on one acre of ground. That forty to sixty bushels is common.

Mr. Dey.—I observed that when the wheat was first sown, the crop is ordinarily about fifty bushels an acre. The same field, without any culture or sowing, yields, in the following season, from thirty to forty bushels an acre ; and in the third season the crop (without sowing or culture) amounts to from twenty to thirty bushels an acre. After this they plow and sow again. It was in the vicinity of Sutter's Fort that I saw all this.

Mr. Shelton.—On the first sowing of barley they sometimes have, at the first crop, one hundred bushels an acre, and forty or fifty in the second season, without plowing or sowing.

Mr. Dey.—The proportion of arable land in California is about the same as in New-York.

General Chandler.—What is the present value of the arable land there?

Rev. Mr. Fitch.—Some of the farm lands have recently been sold for eight dollars an acre, but prices vary from ten to fifty dollars.

Mr. Shelton.—The single crop is often worth \$500 an acre. Mr. Horner, one of our greatest farmers, says that he will not take \$500 an acre for his land. Messrs. Horner, Beard and Vallejo have a farm of four leagues of land, (4,400 acres per league,) all now enclosed in iron fence, made of heavy wire, as large nearly as my finger, with posts of the red wood, all drawn up tight. Five wires in this fence. There is one avenue through the farm ten miles in length. The whole length of the fence is about thirty miles.

I became enthusiastic as to the floral and natural history of California. I traveled over it, collecting specimens and preserving them best way I could, under great inconvenience. I employed able artists to make drawings and engravings. I here exhibit them. I was active in getting up the first fair, and had the pleasure of presenting a silver goblet to Mr. Horner, so well merited by him. There were exhibited enormous vegetables. One onion, from the farm of Mr. James Williams, of Santa Cruz, weighed twenty-two pounds, and would not go into the head of a flour barrel. A turnip of about the same size. A cabbage which measured inside the principal leaves thirteen feet and a half in circumference. From Beard's farm a perfectly solid head of cabbage, seven feet and a half round, weighed fifty-six pounds. They sold in the market for twenty cents a pound.

Rev. Mr. Fitch: I measured a spruce tree lying on the ground, and found it to be three hundred and twenty-five feet in length, and nine feet in diameter.

Mr. Shelton: Wheat and barley grow there to the height of six to twelve feet, I measured a redwood tree, found it three hundred feet in length, and at the ground fifty feet round.

Mr. Dey: The grapes there reminded me of our best catawbas, as to flavor.

Rev. Mr. Fitch: They are not indigenous; all have originally been brought from Europe.

Messrs. Dey and Shelton concur in this statement.

Rev. Mr. Fitch: One general crop can be had in the period from November to June, always, and several crops where irrigation can be had.

Mr. Shelton: Wild oats cover in some places valleys and hills. They grow from two feet to six feet high, and occasionally ten feet. Men have tied the heads of these oats over their own heads, while they were on horseback. It grows so thick in some places that it is extremely difficult for horse or man to get through it.

Mr. Dey: I have rode for miles through the wild oats, and they were difficult to get through; they were generally as high as my saddle-lop.

Rev. Mr. Fitch: The growth of wild mustard in the valley of San Jose is extraordinary; it was higher than my head as I sat on horseback. One cannot get through it; you must keep the path beaten by the horses. The plant yields a great abundance of seed of a dark color. I discovered that the caterpillars there are almost all silkworms; they feed on the leaves of the oak, make cocoons about one-third the size of those of China and Italy, and the silk is of a cream color and very strong. I have no doubt that if they had mulberry to feed on, they would make cocoons as large as any silkworms do. The Chinese of California say that the silk is finer than that of China.

Mr. Shelton: The Chinese there say that tea will flourish in California.

Rev. Mr. Fitch: California is a most admirable region for sheep, which feed and fatten on the inexhaustible fodder of the

dry season, and there is no underbrush to hinder their free motion.

Mr. Shelton: I pulled the two beets shown at this Club last year. They weighed, one 47 pounds and the other 63 pounds. The ground where they grew was ploughed and harrowed, the seed sown in rows. Very few of them came up. They were planted in May and pulled up in October. They grew with only four to six inches of the root in the ground, the main bodies out of the ground about two feet; among them turnip beets, one of which weighed 45 pounds, was boiled and served up at a table where about two or three hundred persons partook of it. It was fine.

Mr. Dey: There was no dish large enough to hold it. It was as fine and delicate as any beet I ever tasted. It had no strings in it.

Mr. Shelton: I observed that common onions had sometimes produced, there, top onions.

AGRICULTURE OF CALIFORNIA.

Mr. Meigs read—Agricultural Fair, Sacramento, Oct. 7, 1852. An address by Dr. John F. Morse, and a large exhibition of flowers, fruits, and farm crops, viz:

Major Bennett's farm and garden. The garden of 30 acres, and 60 acres of grain; employs ten men; receipts from the garden weekly \$595.

Smith & Barber, farm, 30 acres of garden, yield \$60 a day.

Mr. Southwick keeps 125 cows, at a cost of \$600 per month; sells per day 175 gallons of milk, at \$1 per gallon; has an annual revenue of \$63,000 from his dairy alone.

General Hutchinson—800 acres of barley, 50 bushels per acre, weighs 52 lbs. the bushel; worth \$91,584.

Mr. J. C. Davis—600 acres; 200 head of stock.

J. M. Horner, of San Jose valley—200 acres; 80 bushels of barley per acre, 16,000 bushels; 150 acres of potatoes, 390 bush. per acre, worth \$4 a bushel, besides large crops of wheat and oats. Statistics not yet received.

Mr. E. L. Beard, of same valley—540 acres in barley, wheat, and oats; average yield 50 bushels per acre; 260 acres of potatoes, 250 bushels per acre, 65,000 bushels; aggregate amount in value \$260,000; and 16,000 lbs. of onions, 90,000 lbs. of grapes, and 24 acres of cabbages.

Corn stalks from Major Bennett, measuring thirty feet in length, but no grain on; beets 40 lbs.; cucumbers $6\frac{1}{2}$ lbs.

Pears and peaches, equal to any we ever examined; watermelon and egg plant, far exceeding any we ever saw; large green winter apples and fine yellow fall apples, large Selousle and virgali-en pears and St. Catharine peaches, native California peach, a rich one.

Captain John A. Sutter exhibited some magnificent specimens of Italian wheat, the seed of which was obtained from the straw in which the statute of Washington had been packed.

A ten dollar medal was awarded to John Suydam, of American river, for the best specimen of native wine. A like medal to Warren & Co., of Sacramento, for best figs.

General Tallmadge moved an adjournment to Tuesday next, at noon, in order to hear further from our California friends. This will enable some of our visitors from abroad to attend. Carried.

The Club adjourned to Tuesday next, November 23, at noon.

H. MEIGS, *Secretary*.

Farmer's Club, November 23rd, 1852.

Samuel Griffing, Esq., of N. J., in the Chair. Henry Meigs, Secretary.

Present about forty members.

Mr. Shelton being requested to continue his remarks upon the vegetation of California, with his Herbarium and drawings and

seeds before him—the specimens of plants and drawings of plants being about one thousand in number.

Barley grown from one grain yielded a mass of stalks and grain which weighed seven pounds and one-half when dry. I have seen ninety stalks of barley grown from one grain, and in another instance two hundred and twenty (Dr. Morse said 225) stalks from a single grain. The growth in height is about three and one-half to four feet. The heads contain from forty to sixty grains each, so that one grain yielded somewhere about six thousand grains.

Mr. Hawley, of San Jose, made a report of an agricultural exhibition, in which he states, that at the rancho of General Vallejo, called Buena Vista, (Fine View) there had been raised upon less than six acres of land, nine hundred and sixty-five bushels of barley, or about *one hundred and sixty bushels per acre*. From two acres of land were raised eighty thousand pounds weight of onions, or *twenty tons weight per acre*. Mr. Horner, one of the greatest farmers there, told me that he believed that he could raise on one acre, sixty thousand or even seventy thousand pounds weight. He had sold the crop of one acre at half a dollar a pound, and received from it, \$20,000, for that crop was forty thousand pounds weight of onions.

Dr. Underhill, of Croton Point.—We are anxious to obtain certainty in reference to the vegetable productions of California, which in many respects vary from and exceed all known to us.

Mr. Shelton.—The potatoes are large and very fine. I have taken fifty from a field which weighed from one and a half to four pounds weight each.

Mr. Dye.—I wanted to obtain a fair sample of the onions raised on the farm of Messrs. White, Kearney & Co. Those which I took and such as I saw in bags—I believe, weighed, on an average, over one pound a piece, and one of them weighed three pounds and a half. I intended to send some of these to this Institute, of which I have the pleasure of being a member. I am asked how we cook the large potatoes? I reply that we found by experience that we could not cook the large ones whole,

because they would always be done and indeed overdone on the outside while the inside was not at all done—so we had to cut them into smaller pieces. The onions occasionally are so large that one of them covers a breakfast plate eight inches in diameter. Those onions are of the most perfect shape as if turned in a lathe—their skins very thin—reddish color—the onion very tender, delicate, free from that strong smell and taste which other onions have—our people in California eat them as one does apples.

Mr. Shelton.—I found the onions by measurement, commonly, five, six, and seven inches in diameter. They plant the seed in February, in March they transplant them, and in June or July at farthest they are ripe. They often cover the ground entirely. They require much moisture. As yet, no manure has been used. The onions are large at Horner's farm, but larger at Los Angeles. They grow large on the coast of Mexico. The miners and some others eat them as we do apples. The miners have given one dollar a pound for them.

Austin Church, M. D., remarked that the onion, as well as bulbous roots, usually bears drought well, on account of its growth in concentric layers.

Mr. Shelton.—The climate of San Francisco is so mild that tomatoes grow all winter in the open air.

Mr. Holmes.—How do you get in ice for summer use?

Mr. Shelton.—Boston sends us some, which sells at ten or twelve cents a pound weight. We get some snow from the mountains. We are looking to our northerly regions for it. We have heads of lettuce weighing three or four pounds a piece very solid. We cut them as we do cabbage, for cold slices. All kinds of lettuce head well. Radishes are fit for the table in thirty-one days from the seed. I have the roots growing, with the tops two or three feet high from the ground, and as large as my leg.

Mr. Dye.—I first saw radishes brought for sale which were from one and a half to two inches in diameter. I objected to their large size, supposing they were, as ours of that size common—
[Assembly No. 133.]

ly are, fibrous and tough, but they were perfectly tender. On the next, some were offered for sale as large as my arm, which were equally delicate and tender. In and about Coloma the land is hilly; it yields thirty to forty bushels of barley per acre; it requires irrigation. The onions grown there averaged one pound weight a piece. Lettuces twice as large as those in New-York market. It is not the best agricultural district.

Dr. Underhill presented a large quantity of Catawba grapes from his Croton Vineyard. The members thought them very excellent.

Mr. Shelton.—The California grape called “Catawba” is far superior in flavor to these on the table.

Mr. Dye.—It is so, being without any pulp, and so tender that it is difficult to handle, and is very delicious.

Dr. Underhill supposed, that being unable to make a comparison in California, the gentlemen thought their grapes very superior. Do not they recollect that when they were boys, our wild grapes being found ripe, tasted delicious, for want of comparison with our finer kinds. The fine drawing of a basket of California fruit on the table shows their grapes no larger than my Catawbas.

Mr. Dye: We have abundance of grapes in California. I used to have them three times a day on my table, in clusters of one to seven pounds weight. The berries are oblong, egg-shaped. Some people called them “Catawba,” and others “sweet water.” The berries are clear, of a light reddish, brown color. There are very few wild native grapes there. The only one I discovered there was a bright red color, smaller than our fox grape, hardly any pulp, acid as vinegar. I gathered a sack of them to make vinegar, and succeeded in obtaining very good vinegar from them. All the grapes there besides this were descendants of those imported by the Spaniards long ago. Those fox-grapes had some eight or ten small berries on each bunch.

Mr. Shelton: The Catawba grape of California has no pulp at all.

Mr. Dye: in the vineyard of General Vallejo, at Sonora, the vine is now about nine years old. The vines are pruned down to about two and a half feet high from the ground. The cluster of grapes on them are very large. The best of them lie upon the ground. Some weighed ten and eleven pounds each.

Mr. Shelton: It is but three months since I was in that vineyard, and I got one cluster of grapes weighing ten pounds and another of eleven pounds. The berries are very tender, and easily crushed. It is necessary to wrap up each cluster in paper, and transport them very carefully.

Dr. Underhill thinks that the same wonderful effect of soil and climate displayed in so many vegetables appear in the grape, and that if they were brought here and planted, they would diminish to the standard of our own fruits and plants.

Mr. Shelton: The best clusters lie and ripen upon the ground.

Dr. Underhill: Is gold dust found in the good soils of California.

Messrs. Dye and Shelton: None whatever.

Dr. Church: What is the soil?

Mr. Shelton: It varies much in complexion, some of it being very dark. There is a sample of it as dark as slate. I exhibit to the Club my Flora of California, in drawings and herbarium; seeds also. The famous Burr Cloverseed. (Members examined them, and felt surprised that such well-drawn and colored plants and flowers should have been executed in California.) Mr. Shelton said he had seen one hundred and twenty-five pounds weight of potatoes dug from five stalks of potatoes. I am availing myself of the aid of Professor Torrey, of this city, in the classification, &c., of my plants.

Mr. Dye: The soils of California are very various. I have examined as many as twelve varieties of clover, and I suppose that there are twenty there. I have seen in the length of one hundred and twenty miles' ride, Burr Clover and wild oats' seed lying on the surface of large tracts of land, from one to two inches

deep. The stems of the plants are converted into good hay. Cattle and stock lap up the seeds with their tongues, eat this natural hay, and become fat upon it. I had a ton of potatoes from Santa Crnz, and bet with a doubter that they would average one pound weight apiece, and won the bet on a portion of them. I offered to make the same bet upon the whole ton, but it was refused.

Mr. Shelton: One clover of large growth has been called in honor of myself the Shelton clover. One root of it, stalks and all, weigh six pounds. Its heads are first a cream color tint, then turning light purple. There is a white clover which grows about three feet high. My Herbarium and Flora contain about one thousand specimens. The apples and peaches are small; the pears fine and good size. I gathered a large collection of specimens of mineralogy in the course of my rambles. They occupied extensive tables in the exhibition at San Francisco.

Mr. More, from Switzerland, now a florist in New York, exhibited the seeds from the melo cactus—in the Repository. The two cactus are from the island of Jamaica. The seeds are imbedded in the red top of the cactus. This red top is composed of red thorns of an inch in length; while all the ribs of these oblong, melon-shaped cactus are beset with keen thorns pointing every way. Mr. More stated that the seeds germinate slowly, producing a very minute plant, of very tardy growth. That the specimens before us, which are about two feet high, by one foot diameter. One, having twelve longitudinal ribs of thorns, and the other, eleven such ribs, are about fifty years of age.

Subjects: New plants, new uses of old plants, and the Osier Willow, continued.

On motion of Alanson Nash, Esq., the Club adjourned to Tuesday next, November 30, at noon.

H. MEIGS. *Secretary.*

Farmers' Club, November 30th, 1852.

Samuel Griffing, Esq., of N. J., in the chair. Henry Meigs, Secretary.

Present.—Messrs. Griffing of New Jersey ; Hyde, of Fulton County, New-York ; A. P. Cummings, President Tallmadge, Mr. Dickey, Dr. Austin Church, Judge Van Wyck, Messrs. Holmes, Hardenbrook, and others.

The secretary read the following paper prepared by him, premising, in reference to the vitality of seeds, that the most learned men of the day take a very deep interest in that subject—that it is a question whose mysteries eagerly want explanation.

VITALITY OF SEEDS.

Some months ago the Club received an amount of raspberry seeds, found in the grave of a man who had been buried about 1,700 years, germinating on being planted. Many persons entertained doubts of the truth of this. We now extract from proceeding of the 22d meeting of the British association for the advancement of science.

Dr. Lankester read the 12th report of a committee appointed to make experiments on the growth and vitality of seeds. The seeds set apart for this year's sowing were those collected in 1844. It was the third time the same seeds had been experimented on, and it was found that there was a very evident decrease in the numbers of those which have vegetated compared with those of previous sowings. Dr. Lankester explained the object of the committee, and stated that the fact of raspberry seeds growing, which had been taken from the stomach of the body of a human being, buried in a tumulus in Dorsetshire, and which had been doubted, had been reinvestigated during the past year, and there seemed no reason to doubt that the seeds thus buried for centuries had germinated.

Dr. Royle stated that, having been present when the original mass of matter from the stomach of the dead person was brought to Dr. Lindley, in London, and the raspberry seeds discovered it. He had no doubt of the correctness of the conclusion, that the

seeds which had thus been swallowed, and buried, had germinated after the lapse of centuries.

Mr. Meigs called the attention of members to the well known fact of the growth of clover and other plants in places which has been covered for ages with forest, and where the clover had never before been seen. The late observations in France and elsewhere of the long keeping of seeds in the earth at considerable depths. It is true that the committee of the British Association find that seeds kept in our boxes and in dry places soon lose their vitality; but the experiment, to be effectual, should take the same position as the buried raspberry, white clover, and others. It is well known that wood, and leaves, and nuts have been found in the course of geological research, buried in marshes and otherwise, perfectly sound. The buried timber of the peat bogs of Ireland and elsewhere is found good for all the purposes of a surface tree, and yet must have been buried at least 2,000 years. The deep pits made by some of the ancient African and Arabian people, to keep their wheat, preserved it sound for great lengths of time—placed at a depth where the temperature never changed three degrees in a century.

CHICORY OR SUCCORY.

In the Mark Lane Express, of July 5, 1852, we find the following notice of the value of this plant.

“Chicory will turn out to be one of the most important agricultural as well as horticultural roots that perhaps nature has ever given us. Every part of it is of great value—top and bottom blanched for salads; green for cattle, sheep and lambs; the roots for cattle as well as for coffee.

Immediate attention ought to be paid to it. Every seed merchant possesses the seed of it and it is exceedingly cheap. If chicory was largely grown by the cattle and sheep farmers, much less disease would prevail and more milk and butter would be produced, and more healthy meat, as it is so fine a bitter and purifier of the blood. This root is largely grown in Yorkshire to

mix with coffee. One fault is, that by trying to get a large crop, we injure the flavor."

This suggestion is new to us, but chicory deserves a trial we give the following description of it, which may be acceptable to some readers.

From Lindley's Vegetable Kingdom.

Asteraceæ Compositæ—Star flower—one of the most natural and extended families of the vegetable kingdom. They are herbaceous plants (that is as a plain definition they lose their annual stem but the roots survive.) Centaury, Dandelion or *Dens Leonis*, *Artemisia*, Taragon, Chamomile &c., &c. Chicory has a delicate bitter. The bitter of *Artemisia* has been employed in medicine from the most remote antiquity. It is called *Chichoriumintybus*. Is a perennial, in general figure is like the dandelion. Its flowers are blue—its root shaped like a carrot. The edges of the leaves, (like the dandelion) are deeply indented. The whole plant is bitter and aromatic—when blanched well—is relished as a salad. For this purpose they were taken up in the end of Autumn, and put into light mould or sand in a dark cellar—the leaves being first cut off within half an inch of the crown.

Fresh slender leaves soon grow from the roots and being deprived of light are much more tender and delicate and the bitterness is lessened. From the long slender matted condition of the leaves, the French call it *Barbe de Capucin* or Monk's Beard. The luxuriant growth of the leaves and speedy reproduction after being cut off, suggested the extensive culture of it for cattle and sheep. Crete de Panuel who cultivated it in a rich soil, near Paris, has produced extraordinary crops. The first year he cut it off only twice, but afterwards four and even five times in the year. And it yielded more green food than any other plant cultivated for that purpose. Arthur Young was so struck with it, that he recommended it strongly to the British farmers. The experiment on it at the national farm of Rambouillet comparing it with Lucerne—the Chicory was deemed inferior to the Lucerne, giving a disagreeable taste to the milk and butter. Good for sheep, mixed with their food, preserver from the rot.

Chicory is now chiefly cultivated in Belgium, and in Germany for the purpose of preparing from the root a powder as a substitute for coffee and has now become quite an article of commerce.

To have the roots in perfection, the seed should be drilled like carrot, in April—if sown sooner, they are apt to run to seed. The land should be rich, deep and light. The plants should be thinned out to six inches apart in the row and most carefully weeded. In September the leaves should be gathered and the roots forked out of the ground. They must then be cleaned by washing and scraping—split when thick and then cut across into pieces three inches long and then dried in a slow oven or kiln—must not be scorched—when wanted for coffee, must be cut into small pieces, roasted like coffee and ground like it in a mill.

The roots left over the first year in the ground become stringy and tough. It is only the root of the first year that is fit. They lose largely in weight on drying—Thirteen pounds of seed will drill an acre—grass and corn are good before the chicory crop. Rows a foot apart.

The name chicory, is an anglicized French word being originally Chicoree or Endive. The Prussian chicory is the best. In England dried chicory is roasted like coffee and about two pounds of lard are put into the roaster for every hundred pounds of chicory to give the coffee a better face. Venetian red is put in to color it. Some put in logwood and mahogany dust also peas and beans, damaged grain and coffee husks, technically called, *coffee flights*, parsnips go in too—treacle is in to give the caramel or sugary odor of real chicory. Chicory is also used to adulterate snuff and to color beer and porter.

New chicory seed, is said to yield more woody and therefore inferior roots than the old seed.

Of course, we do not recommend chicory as a substitute for coffee—but we do recommend it as a valuable food for stock.

Lindley maples. Aceracæ, from Latin *acer*, a maple tree—Europe, the temperate parts of Asia, north of India, and North

America, are the stations of this order. It is unknown in Africa and all the Southern Hemisphere. The species are only known for the sugary sap of the acer saccharinum (sugar maple) and others, from which sugar is extracted in abundance, and for their light and useful timber. The bark is astringent, and yields the dyer reddish brown and yellow colors.

The *Norway maple* is raised from the seed at Flushing and Long Island. Some of the trees attain 60 feet in height. The foliage is dense, little liable to injury from worms; is dark glossy green on the upper surface, light-colored below, and remains bright all summer.

Mr. Curr, the gardener for this city, on the experience he has had, recommends it as bearing a city position better than most others which have been tried. It will attain a large size if not prevented. The growth is quick, for the trees of twenty-one feet height are about fourteen years only from the seed.

Annals de la Societe d'Horticulture, Paris, June, 1852.

Plants newly introduced by Thibaut and Keteleer, Charonne street, Paris :—

Many beautiful new plants are seen here, very curious and original; for very rich flowers and leaves are growing in the conservatories all seasons of the year. One, a charming bush, the *Franciscea Confertiflora*, which flowered for the first time in February and March last, is the most beautiful of the kind known at this day. The leaves are large oval acuminate; flowers, large, smooth, and disposed in a sort of corymbus (a flower with a central axis, with lateral peduncles or foot-stems, the lower ones so long that their flowers are elevated as high as the uppermost.) The color is a beautiful blue, giving a fine effect.

Anopteris glandulosa, a bush from Australia.—Fine form, leaves indented and shining; long bunches of flowers of a *greenish* white, which last a long time.

They have many other fine new plants.

Annales, March, 1852.

Origin of the Pear Doyenne H'Hiver, *Winter Dean*, called, also, Bergamote de Pentecote—Spring Doyenne, lord of Winter.

This pear, according to Van Mons, was obtained from seed planted by the Capuchins of Louvam. It was introduced into France about fifty years ago by Hervey, who obtained it from Van Mons in 1805, under the name of Bergamote de Pentecote—*Pentecost Bergamot*, Hervey thought it resembled an old Doyenne, and gave it the name it still bears, Doyenne d'Hiver.

George Dickey, of New York, who had been requested at a former Club to report upon the commercial condition of the osier willow, made the following report, which was highly acceptable to the Club, as it established several facts relative thereto, important to be known, and especially the nurseries of the true osier willow. The importance of this may be appreciated when we know that of the two hundred and forty kinds, only one, is best—that is, the basket willow or *salix viminalis*:

The Osier Willow for basket-making. ●

Price paid in New York, from the importers, 3½ to 8 cents per pound.

It is imported from France and Germany, but chiefly from France.

England grows all she uses. There is a considerable quantity grown on Staten Island, near Richmond, which brings about 5 cents per pound on the average.

It is planted in small sized twigs, by the acre, in damp soil, leaving some pathways between, and it is necessary to keep the ground clean and clear of the growing to weeds and other plants. It will grow on soil not wanted for other purposes. It will not grow well on a light or sandy soil. The bark is taken off by a triangular instrument, which catches the twigs that are drawn through the instrument, the prongs of the instrument being made round, and are pressed hard on the twigs, which are pulled through the instrument.

THE POTATO ROT.

Gen. Tallmadge called for the reading of the following :

Ogdensburg, 6th November, 1852.

To the President of the Farmer's Club, New York.

SIR:—I know of no more suitable medium through which to communicate the following information, which I look upon as an effectual remedy against the blighting influence of the potato rot, if acted upon, than the Farmer's Club of New York city, whose operations I have always watched with a good deal of anxious interest. I, therefore, come at once to my subject.

In the early part of last spring, a gentleman of my acquaintance, Mr. Woolley, who keeps a well-stocked farm in the immediate vicinity of this rising town, by way of experiment, sowed a few acres of different descriptions of potatoes, many of which had been long discontinued altogether, from the repeated failures in the crops, year after year, through the desolating influence of the rot. Among these were the lady finger, minion, kidney, and a great variety of the more delicate descriptions of this valuable esculent. I went through his farm lately, and paid particular attention to the potato crop. Not a single failure occurred in any instance. And now as to the remedy. In sowing the seeds, Mr. Woolley raised a small hillock, and then constructed a drill, as in the ordinary mode of planting the seed, and after laying down the seed on the top of this small hill of earth, he used as a manure about half a shovel full of common tan bark, shaking it loosely over the seed, and then covering all with a heap of loose earth, in the same manner as is usual in planting or sowing the crops. Medical men and men of science will be well able to account for the great protective qualities of tan bark against the ravages of the small worm or any kind of insect. They will not approach tan; it kills them. The absorbent qualities of tan bark, which sells at only 1s. per load on the average, also protects the delicate seedling from rot, produced sometimes by heavy rains, and a variety of other causes; and in the excessive heat of the summer's sun, too, tan is considered by men of science to whom I have spoken on the subject as a non-conductor. It is, too, of a

porous nature: and when the seed begins to grow, it has full freedom, and is effectually protected from being too closely pressed upon or squeezed up, as is often the case in hard clayey soils. Its advantages in every respect will prove incalculable; and from personal observation on Mr. Woolley's farm, I do not hesitate to pronounce tan bark a sovereign and effectual remedy against the potato rot, and which should be used by every farmer, partially, if you choose, during the next season for sowing the potato seeds. This information ought to be extensively circulated; and in writing to the Farmer's Club upon this subject, I feel I but discharge an imperative duty, when I take into consideration the dreadful ravages of this blighting disease, for the last few years in particular, sweeping, as it has done, over the European and American Continents, like the Asiatic simoon or the cholera itself.

Respectfully Yours,

GEORGE D. DOWLING,

Editor and Proprietor Daily Morning News.

President Tallmadge remarked that we are too apt to adopt crude and incongruous notions in reference to questions on which some mystery rests. This one of vitality of seeds is in that predicament. That it still is a subject of wonder—an object of common and of scientific inquiry—the wonder of our new settlers, who beholds oaks and maples spring up where he has just cleared off a veteran forest of pine trees; white clover also, apparently dormant for centuries under the old forest, now at a clearing—showing its beauties, as if it had been just planted by the settler. These and many analagous observations have made me a doubter all round about the question—patience and more research may remove doubt, but at this day, the doubts are still good. The banks of our river Hudson can show you districts where, after you have for some three or four years ceased plowing, the land sends up a thick crop of red and white cedars. The succession of the animal races is equally mysterious. Our business is to look for facts.

To suppose that the seeds have laid dormant for such a period of time, is an incongruous and improbable supposition. The

proof of these cases, of the deposit of the seeds or their finding, at the opening of the place of their deposits, is insufficient and inadequately established. I am not ready to believe, at this day, in this class of miraculous discoveries. May I not allude to the wheat now constantly found in and brought from the Catacombs of Egypt, and sent to this country, after having been there in deposit from two thousand to four thousand years, and found here readily to vegetate. Proof of the finding at the first opening of the catacombs was omitted to be sent with the wheat. It is a known rule of political economy, that demand procures supply. Where is the traveller, in the districts of antiquity, that does not know the ready merchandize of antique medals, coins and relics of all sorts—manufactured for the occasion, in every city of Europe. It was in 1799 or in 1800, that the French army went into Egypt. They were attended by a corps of eminent Savans, to note and record all discoveries then made. I am not aware that on the opening of the catacombs, wheat was found then so readily to germinate. I am more willing to believe that wheat or other seeds may have been deposited there during the last fifty years, for the purpose of being found as an article of merchandize like the medals, &c. I am not prepared to believe in these modern miracles without proof more decisive. A word more, as to the ancient wheat. It is an easy matter to discolor modern wheat and give it all the appearance of antiquity, to make good true mummy wheat (apparently) and it satisfies the curious—is made merchandize of and is transmitted to foreign countries.

Mr. Fleet did not think that any doubt attached to the statements just read by the Secretary.

General Tallmadge said that he took pleasure in receiving all faithful communications like that of Mr. Dowling, relative to the famed potato malady. The Massachusetts Agricultural Association has published numerous articles from farmers, &c., with all their experiments—but it seems to have been without the attainment of any useful conclusion. Accident may reveal what all our science and industry cannot reach. And in fact, the potatoes of this year are happily untouched for the most part by that lamentable, incurable disease. The fact is that we hastily culti-

vate—manure is all fresh and coarse, we put our seed potatoes in it, by its too rapid growth under the heat and fermentation of the coarse manures, and we have found them fair outside but with a dark colored hollow in the centre—often as large as a walnut. If we should use rich and matured soil, where the manure has been a year or two on hand, it is probable that the potatoes would be found sound. The rot was followed by the hollow—there is probably some connection between the two. I think it is the duty of this Club to press on our farmers the propriety of putting well decayed and ripe manure only, on their lands.

A. P. Cummings of Williamsburgh, observed that the potato crop of this year is remarkably fine, we have had a dry season, the great disease has not appeared. The case reported by Mr. Dowling therefore is not conclusive—for crops of potatoes, however cultivated, are generally good this year. There is no doubt that the tan bark so applied, operates as a kind of mulch—so would dry leaves have done.

The Secretary said that the French Savans, at Paris, have spoken well of the transactions of the Massachusetts Agricultural Association, relative to the potato malady in this valuable particular—giving faithful results of so many experiments made in vain, therefore, rendering a repetition of them unnecessary, thus saving to farmers, &c., much trouble, cost and time.

A. P. Cummings said that there was another nursery of the true basket willow, at Newburgh, established by Mr. J. Beveridge and his son-in-law, Dr. Grant, and the plantation is extensive.

President Tallmadge: Our farmers ought to see that the culture of this osier is an important item. Our German new settlers have a knowledge of the true kind and its management. We pay, it seems, seven or eight cents a pound for that imported from Europe which our farmers ought to put in their own pockets. It is a bulky article and the cost of transportation constitutes the great part of the price. England, with her moist climate, grows her osiers with great facility—we may not soon export ours to them, but if we could export a few of our sun shine days to England, it would astonish them. We have unproduc-

tive moist lands where we can grow more osiers than we want. While I am up and the subjects of new plants is in order, I renew the urging of our farmers to give us American madder; it is a profitable crop easy of culture—of a certain and unalterable value, as a dye nothing can take its place, and we have the right soil for the production of it for a world's supply. Why then continue to import it?

Dr. Church: We cannot dispense with it as a dye.

Judge Van Wyck: The letter which President Tallmadge received from Ogdensburgh for the use of the Club, proposing a remedy for the potato blight, accompanied with appropriate remarks, and which our secretary has just read, will receive the thanks of this Club, as all similar communications do. Any remedy for that destructive disease, if it does not operate as a cure, but only as a palliative, is important. Thousands have been used since the rot commenced, in different parts of the world, and they have all, as yet, been found to be either temporary or local only in their effects. Sometimes, after escaping the blight a year or two, it would break out afresh, in the place where originally used, and often with more virulence than ever. If tried in a distant locality, it was all the same; and frequently in the new place begins its ravages the first year after planting. Weather no doubt has some influence on the disease. If very wet or very dry, it effects the tuber, and brings it on, or renders it more violent. As the President very properly observed, manures, too, do this, either applied in a bad state, or without judgement, and at the wrong time. All this is no reason for discouragement; but the world should persevere, on a subject of so much importance, in discovering and applying remedies. Ultimately, success may crown its efforts.

The procuring of new and useful plants, either foreign or transplanted them from one distant part of our country to another, or sending and transmitting seeds and cuttings: the importance of this was fully evinced at one or two late meetings of the Club, when three gentlemen of great respectability and intelligence,

lately from California, and who had resided there some time, all engaged, more or less, in agriculture and horticulture. These gentlemen brought on with them a variety of seeds of different plants, natives of California—grasses, grain, fruits, vegetables, &c., and presented them to the Club for distribution. Gen. Chandler, at one of the last meetings of the Club, presented some limbs or twigs of the *osier willow*. They came originally from Mr. Bennet, at or near Albany; and from their length, slenderness, and apparent toughness and flexibility of their wood, it is thought they are the real osier. Mr. Dickey has given us some important information as to the cost of the osier here when prepared for use, and the manner of preparing it, by stripping the bark from it when green with something like a pair of iron pincers; after this it should be kept in a dry place, where the sun has power, or put under shelter, especially in wet weather, until it gets well dried.

President Tallmadge.—One word more as to the osier, and that is: it does not require replanting. The new growth becomes more abundant after cuttings have been taken from the stump.

Samuel Fleet.—We make baskets in abundance for almost all purposes out of tough oak and hickory. They are made cheaply; but as our trees are fast disappearing, the osier will well supply us with baskets.

Hon. Richard Bacon, of Simsbury, Connecticut, addresses a note to the Secretary, stating, that, in compliance with the request to send seeds of the sugar maple, and the elm, he has found some of the former in good condition, but a large portion were blasted; that he had not looked for the elm seed in due season, and none were to be had. The elm seed, he remarks, resembles that of the parsnip. The Club will please to order the sugar maple seed to be sent to California and Oregon, together with seed of the locust, with others. Ordered accordingly.

Mr. Fleet observed that the inaccurate, defective accounts which we get usually of the crops render it desirable and important to procure proper statistics, and at quarterly meetings read and digest them for publication. With a view to that end I will prepare a plan, and submit it at a future meeting.

President Tallmadge.—The accounts which have reached us relative to the character and quality of the vines and grapes of the coast of the Pacific ocean, in North as well as in South America, are very interesting to us, because our vines, imported from Europe during a long period at heavy expense and great labor, have all, after a short life, failed on this side of North America, and we have now found out but two native grapes which we are desirous of seeing in our desserts—they are Isabella and Catawba. It now appears, so far as accurate information has reached us, that the vines carried from Europe to South America, by the Spaniards, during some centuries past, have left all along the Pacific ocean, on both sides of the equator; some fine varieties of grapes producing, in some instances, as in California, clusters of extraordinary size, even to eleven pounds weight, as is said. All these may, probably, consent to flourish on this side of the continent, having been so long acclimated on the western shore of our country, being now fairly inhabitants of the United States. Our native grapes are pulpy, thick-skinned, strongly scented of a peculiar musk, and, while sweet tasted, have an acidity in the skin, and, when ripe, a tendency to fermentation and hasty decay. The European sweet grapes have much saccharine in them, and dry readily. They have no tendency to ferment, but not dry or keep long. On the banks of the Rhine we hear of the hock wine. It is a peculiar wine, with acidity in its taste, somewhat like our own wine and grapes. It has not the saccharine juice of the grapes of Spain, France and Italy. I may illustrate by a reference to our peach and strawberry, two of our most delightful summer fruits, and with a remarkable fragrance. Yet they have, when ripe, an acidity in their juices, and a tendency to ready fermentation and decay. They will not then dry. Gen. Tallmadge remarked further that fruits were characterized by climate. The West Indies, in their hot climate, have the orange, pine apple, banana, &c., all suited to that climate, while they have not, and do not grow the cherry, the currant, the gooseberry, strawberry, peach, or any of the mass of our summer fruits. Providence has allotted the laws of vegetation to different districts and different climates, and these rules regulate their several productions. It is the happy lot of our city to be located in a temperate climate,

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where it has a great variety of most excellent fruits; while the sciences, with the use of steam has brought us near by and almost in contact with the West Indies, and the fruits of the south thus easily obtained now in our market, while railroads bring us the productions from the north and the far west, and have thus bestowed the horticultural luxuries upon our inhabitants, and I think I may say (as a whole) greater abundance and of better qualities *than any other city in the world.*

Anxious to provide a generous wine in our own country, for common use, I have, years ago, proposed inquiry relative to the existence or production of some American wine to be the offspring of our own country. We are obliged to say the object is not yet accomplished. Several years ago we endeavored to obtain from Chili and Peru some of their vines that claimed to be distinguished in quality. The search, however, is not yet successful. We must, for the present, content ourselves within the regions of frost, with European grapes cultured under glass, or send to the south, the warmer districts of our country.

The secretary reminds the Club that General Tallmadge moved for the bringing of the grape vines from Chili and Peru long before we dreamed of California.

Gen. Tallmadge moved that our indefatigable secretary endeavor to make arrangements for finding and importing any valuable grape vines from the Pacific ocean.

The Club approved of the motion.

The Club ordered the same subject and also madder, on motion of President Tallmadge..

The Club adjourned.

H. MEIGS, *Secretary.*

Farmers' Club, Tuesday, Dec. 21, 1852.

Present :—Messrs. Underhill, of Croton Point, and Pike, of N. J., Dr. Antisell, Robert L. Pell, Edwin Williams, Alfred Hall, of Perth Amboy, Blakeslee, of Watertown, W. R. Smith and lady, of Macedon, Robert Dickey, General Chandler, Judge Van Wyck, Mr. Flint, late of Massachusetts, and others.

R. T. UNDERHILL, of Croton Point, in the Chair. HENRY MEIGS, Secretary.

Mr. Dickey moved that the Club proceed to try and examine the preserved fruits on the table, prepared by Mr. Smith and his lady.

While the tasting was going on,

Mr. Underhill commenced upon the salutary character of ripe fruits upon human constitution, and especially as to its high importance in cities, where the great heat of summer is very prejudicial to the liver, and, of course to health. Ripe fruit is well known to be of the greatest utility in reference to the action of the liver. Whoever can extend the duration of fruit in perfect condition beyond its now brief season, will contribute greatly to the public health and happiness.

Judge Van Wyck.—And the great benefit bestowed on the community will bind it to the adequate honor and compensation of the inventor.

The Chairman called upon Mr. Smith to make, if he pleased, explanation of the method adopted by him and his lady.

Wm. R. Smith of Macedon.—All the fruit put up by us is grown upon our own farm, and we have of the last season, a few thousand bottles and jars for sale at 17 Cedar street. We use no foreign fruit. We have been for several years trying to preserve the tender, delicate, mature fruits, and have made many experiments. We soon found that we could keep them as well as others do, but we aimed higher. We have lost hundreds and hundreds of bottles, but we will not give it up. What success we have had is due to my lady. We have suffered failures in the taste, color or something or other. We have done better this year than ever before—some people say better than others usually do or have done. Our success is various. We have but just stepped into the vestibule of the great temple. These quinces are presented to you to taste; they are without sugar or alcohol: they are very tender; some think it second only to the peach; it has been boiled. Here is Kenrick's Heath peach—a free stone—it surpasses

all peaches for drying, for five bushels will make one bushel when dried, while the rare-ripe requires ten for one. Here is a mammoth Cling preserved with sugar. Here are cherries preserved whole without sugar—the blackheart and the guines. Here are raspberries whole and sound with much of their true taste, without sugar. Here are red and yellow tomatoes without any liquor but their own, neither sugar, salt, nor anything else. The members said that the red tomato had the original fresh taste—and most of the fruits their true color and much of their true flavor. The light red colored cherry, La belle de Choisy (the beauty of the town of Choisy) is delicious. You can hardly have ripe fruit in your cities. You cannot eat them freely, without disordering your stomachs. Go with me to the tree when the cherries are fully ripe, and pick out the best, you may eat abundantly and feel well.

Mr. Smith.—We are very careful in selecting and pulling our fruit.

Chairman.—Success depends upon having perfect fruit, undoubtedly. I am desired to ask the members who have examined and tasted Mr. and Mrs. Smith's fruits, what is their opinion of them?

The members generally said that several were excellent, and some almost perfect, especially the red tomato.

Mr. Smith.—We have succeeded perfectly in keeping rhubarb fresh. We have a large plantation of that plant. Our blackberries and whortle berries are well preserved.

Chairman.—The fresh preserves supply, in a good measure, during the winter, the place of the summer and autumn fruits, so essential to health and pleasure.

Mr. Smith.—We are not in a plum region; it does not like our light soils. The trees are troubled with the black knot, and the plums by curculio. Plums will soon be, among us, a thing *that was*.

Chairman.—Plant your plum trees near water, and inclining

so as to hang over the water, so that you can gather the plums in a boat. I have a hundred of them growing on my farm in that way, around an artificial lake, and not a plum has dropped from them. The curculio has, here and there, made its segment of a circle on the skin; and then thought better of it; for it left no egg in the incision, observing, no doubt, that when the plum fell it would be into the water, and so drown the progeny. But, in fact, some twenty years ago, our plums generally did well on all soils south of the highlands.

Gen. Chandler asked Mr. Smith what his prices were for his preserved fruit?

Mr. Smith.—We wish to sell the two-quart glass jars for one dollar each; we now sell them for one dollar and a half each, and the quart bottles and jars for six dollars and fifty cents a dozen. Here is our *honey of quinces*, made from the parings and cores. We think it very fine.

On tasting this, the members all agreed it was delicious.

The Chairman warmly commended the fruits,

Mr. Smith desired the Club to know that the fruits before them were not prepared for this exhibition, but are the same as their whole stock.

Gen. Chandler.—What Mr. Smith has said about his perfectly ripe cherries, I can confirm, from experience the last season. I visited Boston, after a long illness, and still in delicate health. I was furnished with some delicious cherries, just perfectly ripe. I tasted, ate sparingly at first, but was tempted to make a full feast of them; and, although I had some doubt as to the effect on my enfeebled organs, they proved perfectly harmless and wholesome to me. We are greatly indebted to Mr. Smith and his lady for this elegant display of fruit; and it is, doubtless, in their power to secure better in future, so as to extend our fruit season to an entire year, at least.

Mr. Hardenbrook moved the following resolution:—

Resolved—That the thanks of this Club be tendered to Mr. and Mrs. Smith, of Macedon, Wayne county, New-York, for their presentation of preserved fruits; and the members having eaten the different varieties, consisting of peaches, cherries, tomatoes, quinces, raspberries, &c., unite in expressing their high approbation of the excellent flavor of such fruit.

The resolution was seconded by Gen. Chandler, and passed unanimously.

The Secretary said, that recently, when this subject was before the Club, he remarked, that in gathering fruit, they should be treated as tenderly as so many eggs; but even that hardly meets the truth. The delicate bloom upon their skins must not be rubbed off; for it is now ascertained that this bloom, on some fruits, when it dries, forms a sort of varnish over it, shutting up the pores of the skin, so that the juices of the fruit cannot evaporate.

Besides extreme care in handling fruit, it is necessary that they should be kept in places in which the temperature is always the same, and that below the line at which vegetation goes on—or, in other terms, just not frozen; probably at 36° of Fahrenheit, by the average of our thermometer, would be about right. If fruit would retain its qualities after freezing, we should then be able to keep it any length of time; but thawing alters the constitution of it too much.

We do not despair yet of finding methods by which the first fruits can be preserved in all their natural excellence, from one year to the next, at least. And considering the enormous amount of peaches lost for want of such means, how important would be the discovery. As the matter now stands, the peach harvest begins and entirely ends between July and October—the grape between September and January. These play a great part in human health as well as pleasure. They would be blessings to our lives for the whole year, as well as for two or three months only.

It is probable that we have to handle about as many eggs in a year as we do of the finest fruits; and the loss is beyond measure in the fruits, but everybody is nice in the egg handling.

Mr. Smith remarked that he felt grateful for the approbation of the Club, and would continue to work for perfection in the preservation of fruit, and that he was in the habit of reading the transactions of the Club ; and he, as one of the ten thousand farmers of New York, had profited by them.

Judge Van Wyck was pleased to have the labors and the ingenuity of our farmers receive full examination and the benefit of fair trial, and then the recommendation to the public, after both fair sight and taste.

Mr. Edwin Williams remarked, that as the introduction of new articles for our cultivation is important, it is therefore necessary that we should have accurate knowledge of the importation of such articles, and that in the non-enumerated articles we have no knowledge of them. We need it. He adverted to the osier, lately under consideration, as one of them.

Gen. Chandler agreed as to the importance of full tables of imported articles ; but the subject belongs to the Institute, and not to the Club. It has been suggested as proper for the Institute to address Congress on the subject. The documents of the Government are slightly improved in this respect within a few years, but are not what we desire them to be.

Dr. Antisell : We have not yet done justice to Mr. and Mrs. Smith in reference to their method of preserving fruit. To appreciate their labors, we must observe the very great care and trouble indispensable to such success as we here see. Observe the difficulty of preventing the oxygenation of fruit, so rapid as it is, and that too, without the ordinary method of immersion in sugar, alcohol or other protection from the atmospheric air. To preserve the natural taste and color is a great point gained. A gentle heat must be used, and the water employed, must be boiled, in order to expel the air from it, and then use it cold. The plumpness and fair color of some of these fruits are truly beautiful. It is a very delicate process to manage the fruits and juices so as not to vitiate the colors and tastes. Mr. and Mrs. Smith have greatly succeeded in overcoming the great difficulties of the

operation. In the old way of sugar and alcohol—you have the alcohol and the sugar but not the fruit.

Mr. Fleet rose to say that he was of opinion that the motion of Mr. Edwin Williams, calling for full returns of articles imported, is an important one. We want the accurate knowledge of them, in order to govern our own industry.

Mr. Shelton stated that he had fifty varieties of flower seeds and bulbs to dispose of. The packages are five dollars each. They are on sale at Thorburn's & Allen's.

On motion the same subjects are continued and the California seeds.

The club then adjourned to the first Tuesday in January, 1853.

H. MEIGS, Secretary.

Farmers' Club, January 4. 1853.

Present: Messrs. Shelton, of Jamaica, and Shelton of California, W. R. Smith, of Marsdon, Dr. Underhill, of Croton Point, Dr. Wellington, Rev. Mr. Carter, of Brooklyn, Mr. Griffing, of New Jersey and Mr. Pike, George Dickey, Dr. Austin Church, Judge R. S. Livingston, R. L. Pell, Judge Van Wyck, Gen. Chandler, and others.

Dr. N. Shelton, of Jamaica, in the chair.

H. Meigs, Secretary.

The chairman announced the subject for the day, American Madder, proposed by the president.

The secretary read the following, prepared by him.

MADDER

Is called rubia from ruber meaning red from the color of the root. Rubia Tinctorum or Dyer's red, is the famous dye. This plant is herbaceous, several stems spring from the same root—the stems are tetragonal or four sided—having hooked prickles at the

angles—flowers small and yellow. The root when dried is about as thick as a goose quill with a reddish skin—odor feeble—taste bitter and astringent. It is exported from the Levant entire—but from Holland and France in coarse powder. England has not succeeded well in cultivating it—climate too wet; and the price of it in Turkey is very low, and cheap in Holland.

The root is perennial, the stalks die every winter. Deep, fertile, sandy loam suits it best, for it does not like a wet soil. First-rate tillage, whether plough or spade, is necessary. New plants are obtained from the runners or surface roots of the old plants, these are cut into pieces of about from six inches to twelve inches. The seed must be sown in fine light soil a year before they are wanted to set out. We generally plant out the sets in May or June, in rows of about ten inches apart and about six inches apart in the rows. They must be kept free from weeds and the ground must be well stirred. Some heap them up—but it is best to keep the surface as it was at the setting. The crop comes at the end of the third year, generally in October. The stalks should be first taken off by the scythe and carried to the barn yard for litter. In very fine weather the roots may be dried in the field by proper spreading, &c., but it is usually necessary to do it in a kiln such as is used for malt or hops. They should be dried until they become brittle, then pack it in bags for sale to dyers. The produce varies according to soil, season &c., but generally it is from one thousand to two thousand pounds an acre. The best way to judge of the quality of it, is to break the root in two and that which has a kind of purplish or bright red appearance, without any yellow cast, is the better. It is chiefly employed to dye and print calico. The tops which are carried to the barn yard to make manure, are sometimes eaten by cattle and it turns their horns red. The seed can be collected in abundance in September of the second and third year. In general madder is not liable to disease.

Mr. Russell Bronson, of Birmingham, Huron county, Ohio, has published his method.

Take land facing the south or south-east, a sandy-loam, or good

brown, deep, rich upland loam, free from foul grass, weeds, stones, or stumps, where potatoes, peas, corn, or wheat were the year before. Plough deep, once in September, and again in October. When spring opens—say 1st of April in Tennessee, 15th in Ohio, and the 21st of May in New York—plough again deep (the deeper the better), harrow well, then lay the ground off in beds, as for beets. Strike ridges, with a one horse plough, once in every seven feet, raising it eight or ten inches, if the soil be moist, or six or eight inches, if the soil be dry. Make the beds smooth with a light harrow.

Should you want to plant one acre, purchase eight bushels of the tap roots in the fall, and bury them as you would potatoes. Count your ridges, and then take one bushel of the roots for one eighth part of your ridges, and plant them out. You will then see how to proportion your roots for the remainder of the acre. One man on each side of the ridge or bed makes the holes. Plant the roots about four inches below the surface of the bed. The owner ought to drop the roots himself. Two men, one on each side, cover up the roots, and press every hill as you do with corn. The holes should be about one foot apart, and six inches from the edge of the bed or ridge. (These distances of the plants from each other are about right, yet in a very rich and suitable field one would make the plants stand a foot and a half apart.) If the plants have leaved out a little, then let the leaves be out of the ground; they ought not to be smothered up.

When the new plant is three or four inches high, weed with a hoe, and plow with one horse between the beds, but not on them. This will be about three weeks after setting out. When the new plants are about one foot high, many of the tops will fall over, help them with ten foot poles crossing the beds. After plowing the beds, use the shovel to throw the loose earth around the plants. You wish to keep each hill separate. About the 20th of June, plow again between the beds, and use the shovel to throw earth between the plants. Then you may, if you please, plant potatoes between the beds. I do not recommend it, but I raised one thousand and seventy bushels of pink eyes on eight acres in madder, the first year, and sixty bushels of corn. When snow

is expected, cover the plants with earth about two inches, in October. When the roots are sufficiently dry, grind them in a mill, like Wilson's patent coffee mill, which weighs only one or two pounds. Your madder mill should weigh about sixty to eighty pounds. Grind it coarse and fair, and then grind it again for market.

Madder is used, in whole or in part, for the following colors on wool, both in England, France, and America—that is, buff, blue, black, red, olive brown, olive, navy blue, and many others. It produces one of the most beautiful, durable, and healthy colors that are at this day employed.

The madder stems, when eaten by cattle, turn the milk redish, the urine, the sweat, and even the bones.

England imports about eighteen millions of pounds weight of madder annually ; duty sixpence a hundred weight upon the roots, and two shilling (half a dollar) upon that which is ground.

A wild madder grows in this country, called, botanically, "Galium Tinctorium." Dyer's goose grass, a perennial, grows in our low moist woodlands ; it flowers in July and August, and grows about one foot or eighteen inches high. The flowers are white. Our indians use it to dye their porcupine quills, leather, feathers, and other ornaments, of a beautiful rich red color.

Mr. Swift, of Erie county, Ohio, has been, if not still, a successful cultivator of madder.

Madder contains several coloring principles, the chief being "alazarine," an insoluble, crystalline, bright red body.

The above extracts from the most recent publications are respectfully submitted. As the volumes containing them have but limited circulation, it is the wish of members to give them what Smithson wisely wanted—diffusion among men. And we earnestly invite from all cultivators of madder in our country accurate accounts of their methods and the results, which we shall be happy to diffuse as widely as we can.

Mr. Pike had tried to produce madder on his farm in New Jersey, and had found it a hard crop to raise.

Dr. Underhill : We are in want of exact accounts from practical men on this and other crops. Nothing is more important. A farmer does not like to undertake a new plant unless he sees his way clear all the way from seed to harvest, and the exact cost and results of crop. He who will furnish such truly instructive lessons will confer a vast favor upon his fellow men.

Judge Van Wyck : Madder is one of the questions before us to day. It is important at this time that our agriculturists should possess the best information about the plant, and especially the manner of growing it, the introduction of it being pretty strongly recommended by some. It will be new to us. Very little has as yet been grown in our country. It requires a rich soil, it is admitted on all hands ; a sandy loam it is said to be the best ; first rate tillage in every stage of its growth ; plowing and hoeing, and that deep ; ground kept mellow and clear of weeds. Good tillage is what most plants require, especially indian corn ; but this last and others now in general cultivation by our farmers yield their fruits within the year of planting them ; the winter grains, so called, within ten months ; corn, oats, barley, &c, within five months. Madder produces no profitable results until the fourth year after planting, and every year deep and dilligent culture. It is used as a dye, and a very valuable one it is. It colors red, brighter and more durable, perhaps, than any other, and several other colors. Scarlet though is the most important and the most in demand ; no other materials will make it scarcely tolerable. It is said to be always in demand in our markets, and they are never glutted with it. If, then, the article, with this length of time before it comes to maturity or fit for use, will pay the farmer better than anything else, we ought to recommend it for cultivation. Such, though, are the habits of our farmers, derived from cultivating, for a long time, an entirely different class of plants, and which produce results so much quicker and more rapidly, I fear it would be difficult very soon to persuade them to try their luck at this new one. Our farmers are cautious in their movements in these matters. They will not risk much ; they

cannot generally afford it; and, on the whole, I think they are right. They must, however, and will, do as they please. Mr. Brunson, of Huron, Ohio, has done more at cultivating the plant, probably, than any other man in our country. He recommends it highly. He says it will pay well. He wrote a lengthy communication on the manner of growing it, and published it. This was some years ago. How he progressed with it afterwards, I cannot say; nor have I heard or seen what progress others have made in the culture of the article, or whether much or any.

George Dickey stated that the madder of commerce commanded, at a general price, twelve cents per pound.

The secretary quoted the following transactions of the society for the promotion of agriculture, arts, and manufactures, instituted in the State of New York: Vol. 1. The second edition revised, Albany, 1801.

From the *Journal de Physique*, 1798.

THE EFFECTS OF OXYGEN IN ACCELERATING GERMINATION.

Mr. Humboldt discovered, in 1793, that simple metallic substances are unfavorable to the germination of plants, and that their oxydes favor it in proportion to their degree of oxydation. This discovery induced him to search for a substance with which oxygen might be so weakly combined as to be easily separated; and he made choice of oxygenated muriatic acid gas, mixed with water. Cresses (*Lepidium Sativum*) seed put into it showed germs in six hours; in water, thirty-two hours. The seeds exhibited an enormous quantity of air bubbles. These do not appear in the water till thirty or forty minutes.

These experiments, announced in Humboldt's *Flora*, and in his aphorisms on the chemical physiology of plants, have been repeated by others; they were made at a temperature of from 12 to 15 Reaumer (near 64° Fahrenheit). In the summer 1799, Humboldt began a new series of experiments, and found, that by joining the stimulus of caloric to that of oxygen, he was enabled still more to accelerate the progress of vegetation. He took the seeds

of garden cress, peas, French beans, lettuce, and mignonette, equal quantities of which were thrown into pure water and oxygenated muriatic acid at a temperature of 88° Fahrenheit. Cresses exhibited germs in three hours in the oxygenated muriatic acid; while none in the water were seen till twenty-six hours. In the muriatic, nitric, or sulphuric acid, pure, or mixed with water, there was no germ at all.

These discoveries may one day be of great benefit in growing plants. Several distinguished philosophers have repeated them. Professor Pohl, of Dresden, caused the seeds of a new kind of Euphorbia, (India rubber is one of them—Meigs,) taken from Bacconi's collection of dried plants, 110 or 120 years old, to germinate. Jacquin and Vandett Schott, at Vienna, tried all the old seeds of the botanic garden, twenty or thirty years old, every attempt to make them vegetate in the ground having failed, and he made the greater part of them vegetate; even the hardest seeds yielded to this agent. Very valuable plants are now growing in Vienna by this treatment. Humboldt made the seeds of *Clusia Rosea*, brought from the Bahamas by Boose, (and which had resisted every effort to make them grow in the ground,) vegetate by a new method of his—that is, by mixing the seeds with a paste made of the black oxyde of manganese, and pouring over it diluted muriatic acid. The vessel in which the mixture is made must be covered, but not tight; for if so, an explosion will occur. The temperature of the mixture must be about 95° of Fahrenheit.

Note.—The black oxide of manganese is largely used to obtain oxygen from.—Meigs.

The best condition of plants for germination has been found to be with a heat over 60° Fahrenheit, and not over 90° . Over 100° the germination is injured.

Dr. Wellington remarked that this stimulation of growth is probably due to electricity, which is apt to be in connection with the process of composition and decomposition.

Mr. Smith recommended, as a subject deserving the investigation of the Club, sumach, both for dyeing and for tanning.

Dr. Underhill.—The effects of electricity on vegetation, by means of wires and copper and zinc plates, were investigated by this Club several years ago; and we found no influence whatever in these, nor have any knowledge which others possessed succeeded. Practical chemists have examined the matter, and pronounced it a vain experiment—an *ignis fatuus*. We are in want of facts to which we must closely stick. By so doing we shall get the thanks of sound and industrious farmers.

Dr. Wellington spoke of the action of oxygen as mentioned in the experiments with manganese alluded to, and said that the galvanic experiments exhibited the oxygen gas, light, heat, &c., in the connection.

Dr. Church had found seeds stimulated in germinating by steeping three or four hours in a weak solution of chloride of lime—a piece as large as a hickory nut, dissolved in one pint of water, with one tablespoonful of vinegar. I tried this experiment upon the bean seeds which I had found difficult to grow; and I was anxious to raise it for the benefit of my patients. When so steeped they grow rapidly. The seeds of the locust are difficult to germinate. I put some of them in a ball of moist sand, placed in the sun three days, with great advantage to their vegetation.

Mr. Pike has remarked their very slow germination, being a year or two in coming up.

Mr. Carter had remarked the same slow growth.

Dr. Underhill said that immersion for a few moments in boiling water, accelerated their germination.

Chairman.—That method has brought them up in two months at the right season of the year.

Gen. Chandler presented a sweet potato, just received from Lewis Morris, Esq., of South Carolina, raised on his plantation there, it weighs four pounds and fifteen ounces, its length is fif-

teen inches, and circumference thirteen and a half inches, its color is light red.

The Secretary quoted "Brown's trees of America."

PAULOWNIA IMPERIALIS.

The genus *Catalpa* was constituted by Jussieu from the *Bigonia Catalpa* of Tournefort. Sieber called this magnificent tree in honor of the hereditary Princess of the Netherlands, a daughter of the Emperor of Russia. It is a native of Japan; flowers in April or May; flowers blue; an agreeable perfume, something like the mock orange; leaves resemble those of a gigantic sunflower; was introduced into Britain in 1840, and France two or three years later; into the United States in 1843, by the Messrs. Parsons, of Flushing, L. Island. It is easily propagated by cuttings from the roots; put into thumb pots; likes a good garden soil loaming and dry.

The Secretary had observed that the leaves of this superb tree, in this city, were not attacked by any insect, and on all accounts it is a prize for cities as a shade and ornament.

The oscillating perpendicular Dash Churn of Ithiel S. Richardson, of Boston, was exhibited in operation before the Club by L. N. Howard. The members were pleased and satisfied with it as new and good. The principle of it is the introduction of air at every oscillation in abundance, by means of which butter is soon formed and perfectly so. The movement of the most easy description being oscillation or pendulum motion.

C. A. Shelton displayed his fine Flora of California before the Club.

The same subjects together with Sumach were ordered for the next meeting.

The Club adjourned to Tuesday, January 18th, at noon.

H. MEIGS, *Secretary*.

Farmers' Club, January 18, 1853.

Present :—Dr. Antisell, Professor Mapes, Rev. Mr. Sewell, Captain Holmes, Captain Barnard, Messrs. Piks, Gore, and Mundy, of Jersey ; Judge Livingston, Judge Van Wyck, Gen. Chandler, George Dickey, and others, upwards of thirty members.

Judge Robert Swift Livingston, in the Chair. Henry Meigs, Secretary.

JAPAN OR JAPON.

Kœmpfer, about 150 years ago, gave accurate information of it in all its principal concerns, especially the vegetation and culture of the country.

It consists of a great number of Islands, reaching in longitude from 130° to 147° east, and in latitude from 30° north to 41°. The natives call it Nippon, which is the title of the largest of the islands. The Chinese call it Chiphon, on account, as is said, of its *eastern position*, both Nippon and Chiphon meaning the basis or foundation of the sun—the place whence the sun comes. The sea winds make the climate pleasant. Snow falls deep, rains violent in June or July, and the thunder storms are heavy and damaging. They have wheat, and the *whitest* rice in the world, other grain, two kinds of beans, peas, millet, Indian wheat, a great variety of fruits, cabbages, turnips, equal to European, no apple, but pears of the very largest size, orange, fig, banana, cocoa nut, jack, ginger, black pepper, sugar, cotton, and indigo, are cultivated in large quantities. Tea shrub grows wild ; Indian laurel and camphor, muynet, aromatic acore, squine root, cerete, mōxa, snakewood, murgō root, the opium poppy, salap, cypress, larch and weeping willow trees, common yew ; quadrupeds. Few hogs. No sheep or goats. Horses and black cattle few in number. The only animals used in farming, &c., are buffaloes and small cows. They eat bears, but abhor the fox. Dogs make up the want of other animals ; they are plenty, sacred, and maintained at the expense of the town. The only game are pheasants and partridges.

Prof. Mapes introduced the Rev. Mr. Sewell, of Boston, who is authorized to take the names of those who desire to become members of the National Agricultural Society.

Rev. Mr. Sewell stated his object to be to solicit subscriptions of new members at two dollars per annum, or life members at twenty-five dollars each.

Prof. Mapes laid on the table, for distribution, some of his (Stowell's) evergreen corn, stating also, its peculiar qualities, yielding double the number of ears of common corn, and has three times more husk. The stalks being cut by a straw cutter, and steeped a little in warm water, form excellent feed, much relished by cattle. The cut stalks are equal to English hay. As fodder, they cure easily, and are fine for stock. Here are some ears of white flint corn, raised by Mr. Shillingsby, of Clinton, New Jersey, by the use of our improved phosphate of lime only. One hundred and seventy-eight bushels of ears per acre; and he raised nine hundred bushels of carrots on an acre by means of it alone.

The corn was planted four grains in each hill, the hills four feet apart each way, and the super phosphate put into the hills.

The members of the Club examined the ears, and considered them to be of extraordinary size, both cob and grain.

Prof. Mapes said that they were not selected with special care, but are a fair sample of the entire crop. When shelled, the crop was 85 bushels an acre.

The Secretary said that Mr. Robert Selden Rose, of Yates county, cultivates, in the best modern style, some four hundred acres of land, and has tried, with great advantage, the Mapes' superphosphate, and intends to continue its use. He stated that his uncle, John N. Rose, of Branchport, in Yates county, had tried successfully a remarkable experiment in raising mushrooms. That is—taking an old dry mushroom, rubbing it gently in his hands, and then sowing it over an asparagus bed, where none had been seen, and in three days he had a full crop of fine mushrooms, which continued to come up day after day. That Mr. Selden Rose followed his example with the same success. The

members were called on for their knowledge in this case. No one present had read or heard of such a result. The advantages of it are great, as any one can have his crop just where he pleases.

[Richard W. Meade, of the U. S. Navy, sends to the Club a specimen of Mercer potato, raised in Virginia. It was considered a good one.

Mr. Samuel Auld, 22 West street, presents to the Club a superior quality of potatoes, from French seeds, same as he exhibited at the Fair. They were in perfect order, and were distributed for propagation.

Messrs. Hovey & Co., of Boston, sent two specimens of the Old Colony corn; one of twenty rows and the other sixteen. Both of them have grains very much shrivelled, like the sweet corn. The grains were distributed.

Pierpont Phillips, Esq., of Pomfret Landing, Conn., sent a number of Wood's seedling potatoes. They are unusually large. The crop was 350 bushels per acre. The quality is improving every year.

William M. Abbatt, of 29 Burling Slip, sent specimens of solidified milk, made in Poughkeepsie for him. Some of our ships take it, and it is found very good, and may be relied on for duration. A grater was employed to pulverize it, and it was then put into coffee, and tasted by members. The experiment should have been better managed. No doubt can be better entertained of its great utility, when we recollect that some 40,000 sail of vessels belonging to our country and England only, require milk as a comfort, and they cannot afford to carry cows.

Captain Holmes had commanded at sea for a great many years, and had generally managed to carry eggs enough to be substituted for milk in coffee.

Captain George F. Barnard was requested also to speak, and he stated the same practice on board his vessel in long voyages—that eggs can be preserved some five months or more, so that they meet the wants of long passages. He used to have the yolks well

beaten up, and then stirred in coffee, and it formed a very agreeable substitute for milk.

Professor Mapes observed that this solid milk should be thoroughly dissolved in warm water before it is added to tea or coffee. This opinion seemed to be that of most members, among them Dr. Antisell, who called to the notice of the Club a substitute for milk now somewhat used in the navy of England, that is, milk powder, said to answer very well, and, probably, is capable of long keeping.

Chester Coleman, of Brooklyn, presented a basket of James river apples, from seedling grown many years ago on James river, Virginia. It is of middling size, dark brownish red skin, remarkably tender, and of fine taste. Mr. Coleman is pleased to bring it to notice, that it may be generally grafted. It was sometimes called the limber twig apple, on account of the peculiar suppleness of its twigs.

The sweet potato sent to the Club by Colonel Lewis Morris, of Charlestown, South Carolina, was cooked by Mr. Upson, of the Capital, corner of Broadway and Leonard street, in excellent style. All who tasted it expressed high opinion of its quality. The weight of it was ascertained by John W. Chambers, the Clerk of the American Institute, to be four pounds fifteen ounces; the skin light red.

William M. Abbatt presented to the Club a cake of Mason's solid Jullienne, a mixture of green peas and other vegetables, which is for a vegetable soup, when cooked, called Jullienne; also, a cake of solid cabbage and another of green beans. The members examined them. Some of these solid vegetables were tried on a voyage around the world, and found perfectly good after about four years in all climates.

On motion, the thanks of the Club were voted to Col. Morris, Mr. Abbatt, Messrs. Hovey, Coleman, Mapes, Meade, Phillips, and with great warmth to Mr. Ernst, of Cincinnati, for his great present of the Japan peas—a plant whose height is nearly five feet, full of branches, woody and strong, being about an inch and a

quarter in circumference near the base, requiring, therefore, no support, yielding at every joint branches of pods, each containing two or three peas, the whole in such quantity that they would probably cover the ground where they grow.

The following letter from Mr. Ernst was read :—

To the Secretary of the Farmer's Club.

Spring Garden, Jan. 5, 1852.

My Dear Sir,—Knowing the deep interest your Institution takes in everything calculated to add to the comfort and happiness of the country, I send you this morning by Adams and Co's. Express, a small package of seed of a new article of agricultural importance to our country, and one which seems to me will prove a valuable acquisition to its products. It was introduced into the country by one of those chance accidents which result in good to all the world, throwing the germs of the products of distant and inaccessible countries and climes over the wideworld, for the benefit of all. Heaven often brings about that which man, by other means, seeks in vain.

The crew of a Japan vessel in distress was relieved by an American ship, and carried into San Francisco, with some of the stores among which was found what resembled a pea. A few of these were brought to Alton, in Illinois, last year (1851). A part of that produced was last spring sent to our Horticultural Society, by Mr. John H. Lee, of that place. These I send you were grown in my grounds from those. I do not know where it should be classed. Doubtless Professor Mapes, or some other scientific member of your "Farmer's Club," will be enabled to assign it a place. The growth is peculiar; it is upright, stiff, woolly, seed pods numerous, small, and woolly; seen when green and forming, resembles a bean in shape, but at maturity assumes the round form of the pea. The yield is very great, and it has all the appearance of a valuable article for winter food. I have not thought it best to subject any of the seed I have to test its flavor, as I have but a small quantity, which I prefer to distribute; but the flavor is said to be fine, resembling green peas. Whether this is when cooked in a green state or dried, I do not know.

As the country from which it comes is now the subject of national intent, and as I see by the report of the interesting proceedings of the Farmer's Club of the 7th ult., the seeds of that country claim the attention of the members, I hope these will not come amiss, and that they may be placed in such hands as will report to your institution its merits next fall. I inclose a part of the stalk, that you may see its habits of growth and its productiveness. It requires more room than I gave it for a full development of its form and productiveness.

With my best wishes for the advancement and prosperity of the objects to which your institution is so honorably devoting itself, I remain very respectfully, yours, (Signed) A. H. ERNST.

P. S.—I almost forgot one important point I had in view—it is to thank you kindly (for I presume it is to you I am indebted) for occasional papers containing reports of the interesting discussions at the meeting of your "Farmers' Club." Such discussions are exceedingly interesting and instructive; and while thanking you for the papers, it occurs to me to remind you of your kind offer, when in your city last September, to present me a set of the published transactions of your Institute. I shall prize them much. It was my intention on my return home from Boston, to have remained a day or two in your city, when I should have seen you again, and taken them with me; but it so happened that I was constrained to leave in the morning before you or any of the officers of the Institute had reached the office. I left a note requesting that they be sent by express.

A. H. E.

The Japan peas were not recognized by any of the members.

They were distributed to the following gentlemen, with the injunction to return to the Club one-tenth part of the product, for distribution in 1854, viz:

Hon. Richard Bacon, Simsbury, Connecticut.

Hon. Robert Swift, Livingston, New-York.

Professor James J. Mapes, New Jersey.

Messrs. Hovey & Co., Boston.

Mr. Amos Gore, New Jersey.

Mr. Christian V. Mundy, Metuchen, New Jersey.

Dr. Nathan Shelton, Jamaica, Long Island.

George Dickey, Esq., New York.

Jacob P. Giraud, Esq., Bergen, New Jersey.

Elijah P. Kimball, Esq., Flatlands, Long Island.

D. F. Manice, Esq., Brushville, do

S. S. Aymar, Esq., Jamaica, do

Alderman Jones, New York, (for his son's farm in Illinois.)

On motion of Mr. Nash—a subject for next meeting—"Forest trees for shade, for timber, and for ornament." American madder continued, and sumach.

Adjourned to first Tuesday in February next.

Farmers' Club. February 1, 1853.

President Tallmadge in the chair. Henry Meigs, Secretary.

Present thirty to forty members.

The president stated the subject before the Club to be our forest trees, for timber, shade or ornament, new plants, madder, sumach.

Solon Robinson recommended the works of Michaux on the first point, as containing the most complete and faithful accounts of most of our forest trees, that his drawings of the leaves of the oaks, (among other,) were so perfect that any person, with a drawing of his before him, can immediately, (by comparison with the leaf of an oak,) know the peculiar species. There is one oak, the burr-oak, which the speaker had examined, whose acorns were among the best known, for their fine quality as food, especially for swine. It is sweet, nutritious and fattening. It is in our western States, Michigan, Indiana, Illinois, and in a scattering growth—wood soft when green—but as hard as live oak when dry. The trees are not very large—the greatest diameter, I have noticed, was about thirty inches.

The secretary read the following papers prepared by him:

PLANTS OF ANTIQUITY COMPARED WITH THE MODERN.

Herculaneum, Pompeii and Stabia have been buried about 1,700 years. Their sites were unknown until the seventeenth century. Pictures of plants and the actual remains of some have been discovered in these entombed cities. Many of the plants, however, did not grow there—for the paintings represent the marshy lands of Egypt—with the Nelumbium, our Victoria Regia; Date Palms, the Stone Pine, and the Cypress of Italy are painted here—carbonized seeds of it, Pine Cones, Aleppo Pine were found here. The modern Oleander and the Joy were in Pompeii. No Aloe—no Ficus Indica are there—for Europe did not see them till after the discovery of America. The Dwarf Palm, there is the same. The Theophrastus describes it 2,100 years ago, as being very general in Sicily then—and it is so now—but is scarce in the vicinity of Naples. Wheat and barley are there in a charred state. There is a fine picture on a wall in Pompeii, representing a quail pecking at a spike of barley—and a side picture to this represents a quail pecking at a spike of millet. We miss here the Maize, (Indian Corn,) we owe it to America. Nor do we meet with Rice here. In that time, when Pompeii was alive, it was confined to the East Indies. A bundle of asparagus is painted there, onion, radishes, turnips, and a small gourd. The olive—a glass jar containing preserved olives has been found there, which retained their flavor when first found. Figs and grapes abound in the fruit pieces there. Pears, apples, cherries, almonds, plums, peaches, medlars, pomegranates. No orange, lemon or citron there.

Botany, by Balfour, London, 1851.

SIZE AND AGE OF TREES.

Forest trees in France, reach a height of.....	120 to 130 feet.
do in America	150 "
do do note, by H. Meigs, over.....	300 "
Some Baobabs are in girth.....	90 "
The Dracœna of the Canaries.....	40 "
An Acer, (maple,) in south Carolina	62 "
In France some trees are in girth.....	25 to 30 "

Oaks in Britain, planted before the Conquest, more than.....	800 years old.
Yew at Fountain Abbey, Ripon.....	1,200 "
Yews in Crowhurst Churchyard, Surrey.....	1,450 "
Yew at Fortingal, Perthshire.....	2,500 to 2,600 "
Yew at Brabourne Churchyard, Kent.....	3,000 "
Yew at Hedson, Bucks, 27 feet diameter.....	3,200 "

A *Ficus Indica*, (Indian Fig,) or the Banyan, on an island in Nerbudda, (a river in Hindoostan, falling into the Gulf of Cam-bay, in N. lat. 4 degrees, E. lon. 81 degrees 45 min.) is believed to be indentified with one that existed in the time of Alexander the Great, and which, according to Nearchus, was then capable of overshadowing ten thousand men. Parts of it have been carried away by floods, but it can now shade seven thousand men, and its circumference, measuring its principal trunk only, is two thousand feet. The chief trunks of this tree greatly exceed our English oaks and elms, in thickness, and are about three hundred and fifty in number. The smaller stems are more than three thousand in number.

The Maronites believe that some cedars near the village of Eden, in Lebanon, are the remains of the forest which furnished Solomon with timber for the temple, full three thousand years ago. These cedars were visited by Belonius in 1550, who found them 28 in number. Rawolf, in 1575, makes them 24. Dandini in 1660, and Thevenot, about fifty years after, makes them 23. Maundrell, in 1696, found them reduced to 16. Pococke, in 1796, found 15 standing. In 1810, Burkhardt counted 11 or 22, and Dr. Richardson, in 1818, states that there are only seven. They must be of great antiquity, seeing that they were counted old three hundred years ago. Maundrell says the largest one measured $36\frac{1}{2}$ feet in circumference, with 117 feet spread of its boughs. Decandolle gives a list of the ascertained ages of some trees, as follows:—

Elm,	330 years.
Cypress, (about).....	350 do
Cheirostemon hand tree,.....	400 do
Ivy,.....	450 do

Larch,	576 years.
Sweet Chesnut, (about)	600 do
Orange,	630 do
Olive,	700 do
Platanus Orientalis,	720 do
Cedar,	800 do
Many Tropical trees, according to Humbolt,	1000 do
Lime,	1076 and 1147 do
Oak,	810, 1089 and 1500 do
Yew,	1214, 1458, 2588 and 2800 do
Taxodium, ever	4000 do
Adansonia,	5000 do

From the Journal D'Agriculture et Transactions, de la Societe D'Agriculture Du Bas, Canada.
January, 1852.

WHEAT FROM A MUMMY.

At the last assembly of the Directors of the Agricultural Society of Lower Canada, one of the members, P. E. Leclere, who is also President of the Agricultural Society of the county of Hyacinth, deposited for examination *three ears of wheat*, which he collected last summer in his garden, at St. Hyacinth, from the grains of wheat which he procured in Boston, from a mummy opened there. Mr. Leclere says that he had obtained from these two grains more than two thousand grains the first year. He has distributed some of the grains among members. He also exhibited the straw of this wheat, which is remarkably strong and perfectly free from rust.

The figure of this wheat differs from every kind of wheat we have ever seen, and also from the modern wheat of Egypt. It appears never to have been attacked by the fly.

Mr. Robinson.—In our live oak regions I noticed large trees girdled—dead—before any of the modern forest began to grow. I suppose they were girdled by the men of an early period, in order to the cultivation of the land where they stood, to get rid of their shade.

President Tallmadge.—What is the life of chesnut? Our Swamp Ash lives to fifty or sixty years, and attains a diameter of three feet.

Mr. Robinson.—Our Sycamore, or Button Ball, Planted by our worthy Deacon Lord—four saplings which he carried in his hand—are now four feet in diameter.

Rev. Mr. Carter.—Saw the sills and lintels of the present Post Office, some years ago, when it was undergoing repair; they were white oak and in perfect preservation, yet they were there from the building of that church, (formerly,) long before the Revolutionary war, during which the British army used it as a riding school.

Judge Van Wyck.—I should like to have heard some more definite information about the age of some of our American forest trees than we have had. Although the question has only been introduced incidentally in discussing some other matters, that had priority among those which are regularly before us, it might be inferred from what has been intimated by several, that American forest trees generally were much shorter lived than they were in the old world. Among a few others, the chesnut *vesca castanea* was mentioned.

This tree, it was said, lived considerably short of a hundred years; there may be cases of this, and of all other trees; these decay and die sometimes from disease, or being planted in a soil and climate not suitable to it; animals are subject to this as well as plants; they get diseased from bad care, bad food, and various causes, and die before maturity. I have seen chestnut trees in healthy situations said to be over a hundred years old, and bearing fruit, and I fully believed it, from the way in which the testimony came, handed down from father to son. This is almost the only way, in our young country, in which we can get a correct history of the age of trees; in the old world, many of their aged trees are identified in some degree with the history of the country or nation where they grew; they were so old, or so large when such a battle was fought, or such a king reigned, (by-the-by, I hope the age of none of our trees will ever be proved by

such an event as the last.) Besides, the chesnut, both here and in Europe, that is certain kinds of it, is hard and compact, and when well seasoned, all the sap dried out of it, there is no more durable timber; it will last longer, it is said than oak, a strong circumstance to show that it cannot be naturally a short lived tree; it attains not only great age, but great size, is long in growing, and certain kinds of it first rate for timber; all kinds of it are good for this, but certain kinds better than others; good seasoning is what all timber requires, to be good; our timber does not always get this; we are too much in a hurry with it, as with many other things, done too quick to last.

At one of the last meetings of our Club, when madder was before us, I stated that, from the best information, in the latitudes of New York and Ohio, and north of these, it was four years, or the fourth year after planting before the article came to maturity. I have seen since, in a very late English periodical of high reputation, that in Alsace, Germany, on the Rhine, and where they raise a great deal and very fine, it is ripe or fit for use the very second year after planting. If this be correct, it will make quite a difference on the profit of the culture of it, one half at least in favor of the grower, by getting his results the second year from planting, instead of the fourth.

The secretary remarked the rapid growth of the elm. When a scholar in the grammar school of the learned Jared Mansfield, (afterwards professor of mathematics at West Point,) he was stopped on his way to school, in 1795, by senator James Hillhouse, of New Haven, and requested to hold some elm saplings in the holes dug by the senator to receive them, on Temple street, while the senator filled in the soil about their roots--the saplings being about the size of a man's thumb. I told him that I should be punished for being too late at school, he bid me run! My excuse was most readily admitted by the good mathematician, Mansfield. A few years since I examined them, and was surprised at their growth. They are of great size.

Jules Lachaume, of Yonkers, presented his cooked Julienur soup, carrots, parsnips, parsley, cabbage, string beans, celery and turnips. They were tested by many of the members, whose

opinions were generally very favorable to the high value of them for our immense ocean population. Some said that the string beans were better than those fresh picked—that the cabbage was nearly equal to fresh picked—carrots had all their qualities, parsnips also. That his Julienne or vegetable soup was, as such—(without any meat,) was quite rich and good—and that at sea, after being some time without them, the seamen would relish them very highly. Mr. Lachaume said that he had learned the art in the manufactory of Mr. Masson, in Paris. The cabbage, jullienne and string beans of his patent were presented by William M. Abbott, of 29 Burling slip, who gave the last Club the solid milk. And in answer to questions as to time, replied that some of the vegetables could be prepared in twenty-four hours; and as to cost, that it is about fourteen cents a pound for all the preserved vegetables; that he has tried to preserve potatoes and beets, but, owing to some acid in them, they turn of dark color—don't look well.

Gen. Chandler remarked that, the object in view is one of great usefulness, and certainly of importance to our commercial and naval marine, and we should encourage the operation. That the governments of France and Great Britain are doing so, convinced of its great value.

Dr. Austin Church observed that potatoes, peas and beans can always be on hand for the marine, on voyages of any length ordinary; the latter, peas and beans, for any length; but fresh vegetables are required for anti-scorbutics. Perhaps these desiccated vegetables may answer that purpose. I will not say positively, the process which they have undergone may have altered them in that respect.

Rev. Mr. Carter: In the condition to which these vegetables are reduced by drying out all the water, and that alone—being now in weight ten or more times less than when fresh—they become fitted for an easy and cheap transportation, so that it may be worth trying in our rich vegetable west, for food to our poorer population in our Atlantic cities.

Mr. Robinson : As an anti-scorbutic, sour kront is considered the best.

Mr. Ayerigg said that many persons can freely eat sour kront, almost live on it, who cannot eat cabbage safely any other way. It is capable of long keeping, and is anti-scorbutic.

President Tallmadge : The propriety and necessity of the cultivation of a large variety of plants, in order to avoid the effects of the loss of any one crop, are painfully made manifest by the famine now desolating the unfortunate inhabitants of the lovely island of Maderia. There, Providence has given them vines of such peculiar value, that the world went there for wine. This naturally led the poor inhabitants to such an universal culture of the vine, that they neglected their vegetable food. Such a lesson should be remembered, for continents have for several years been troubled to find a substitute for the potatoe. From the vast resources unfolded to us by botanical researches, we are daily gaining something of value in every point of view. Much remains undone. We now want madder, to multiply our chances for prosperity. Why import that indispensable dye? We have lands of any amount, suitable to it. Let us grow it all for ourselves, and much as may be called for by the rest of mankind. Our people want all manner of employment. Not one will be idle. None but will work for fair pay. Great good will result. The solid milk which we have examined lately, has high value. Compressed, as it is, occupying little space, of long duration, it is another blessing to our seamen. Not so with another form of milk—that is cheese—very difficult to keep well.

Dr. Church : Some twenty years ago, France had milk in a form which rendered it durable any length of time. That was by heating it to about one hundred and thirteen degrees of Fahrenheit, then adding some muriatic acid and hermetically sealing the vessels containing it. When wanted pure, soda was well stirred into the milk; this produced, by chemical union with the muriatic acid, common salt, sufficient for that portion of milk.

President Tallmadge : To our forest trees again. The object we have in view always, is utility. We are not fond of useless the-

ory. You know the value of the American black walnut. It is our northern mahogany, highly useful to our lands, a good fire wood, beautiful for furniture. The prevailing opinion as to its life is, that it matures at one hundred years, and decays at one hundred and fifty years. Its fruit is good. Many of our pine trees are ornamental, some of well known excellence as timber. Returning to preserved vegetables—we know that green corn is now preserved so well that my family have enjoyed it in all seasons of the year.

Amos Gore, of New Jersey : How long is madder in ripening?

President Tallmadge : It is good the third year. I observed the madder crops in France, some years ago. The crop looked much like a beet crop in the distance. They were growing it for the American market. I felt that our great country ought to save them the trouble. We must grow it. I, for one, am extremely desirous that we should do it.

Mr. Robinson : California, with her powerful growths, would make fine madder, I think.

Mr. Cornell, of New Jersey : There are great differences in the growth of madder; so much so that the price varies from as low as three cents a pound to fifteen or twenty cents a pound, for the best.

President Tallmadge : Sumach is one of the subjects before us. I do not like sumach; it is a nuisance to our lands; it grows everywhere, and in my opinion its uses are no compensation for its evil properties.

Mr. Cornell : It grows on poor land. It would, in all probability, greatly better on good fertile soil, and cultivated. It is an American, and I like it for that.

Dr. Church : Mr. Swift, of Ohio, thinks that a madder crop can be perfected in three years; that it costs one hundred dollars an acre to grow it, and when grown it is worth three hundred dollars. It demands a rich, well pulverized soil; it spreads, and sends down new roots. The crop sells for fifteen cents a pound.

From the *Revue Horticole*, Paris, 1853.

NEW PLANTS.

Translated by H. Meigs.

One of the characteristic traits of the epoch in which we live, is the indefatigable ardor with which all nature is scrutinized; as well in matters purely scientific, as in those in which the praiseworthy desire of creating new resources for the good of mankind. We readily comprehend that in this vast universe in which the Creator has constituted man a sovereign, there is nothing useless, nothing that may not become useful; nothing is, which may not, in intelligent hands, become materials of value, or even necessary, in those sciences which he cultivates, and to which he is urged on by an irresistible curiosity.

It is then that we appreciate those acquisitions which now daily come into our European gardens. We notice the *Auracaria Columnaris*, introduced by Hooker. The arrival of this magnificent conifer made the lovers of fine trees leap for joy. The discovery of it belongs to the illustrious Captain Cook, who thus describes it:

“When we were in sight of the small islands which depends on New Caledonia, S. lat. 19 deg. 37 min. to 22 deg. 30 min., lon. 163 deg. 37 min. to 167 deg. 14 min. E., when upon one of them was a tree which, at our distance, looked like a tower. We soon saw others of the same appearance, assembled on a point. They resembled the masts of a fleet at anchor. Some days later, more, and more considerable quantities of them. We remarked also, that from distance to distance among them, there arose smoke from among these obelisks. Our crew had much to say about these singular trees. I thought that they were trees of peculiar form, because there were so many of them that I could not suppose any thing else, but my philosophers of the deck declared that the smoke was from volcanoes, and the towers were of basalt, like the giant's basalt of Ireland. The smoke, (I noticed,) always began in the morning and ceased at night. At last

he was landed, and all expressed their pleasure and surprise that the supposed columns were trees, except one philosopher, who still persisted in declaring them to be of basalt."

Many years have passed away since Cook said this, and the learned world knew nothing of their existence until recently. Mr. Moore, the director of the Botanic Garden of Sydney, who went to the island, (about fifteen degrees east of Sydney,) in company with Captain Erskine, had the happiness to find the trees, and he sent young plants to the London Horticultural Society, and they are in the Royal Gardens at Kew. It has received many different names—*Dombeya*, *Columnaris*, *Fontis*, *Araucaria*, *Cookii* Brown, *Araucaria Excelsa*, Lambert. It seems to retain, however, the name of *Araucaria Columnaris*. The cones of the male flowers are terminal, elongated, ovoid in figure, formed of leathery scales, imbricated, (one over the other, like shingles,) ending in a soft point. This tree is very good for ship timber, Captain Cook says, excellent for masts, for it has very few knots, the lateral branches being quite small, and the trunk is perfectly straight. It requires a temperate climate to grow in.

RHODODENDRON LOUIS PHILIPPE.

From seed plants sent by J. Dalton Hooker, from the Indo Himalayan of Sikkim, have done well. This, whose flower we give, is from seed planted ten years ago, by M. Bertin, horticulturist, at Versailles. This plant is in the open air, gave the first flower in 1846.

[From the Journal d'Agriculture, Bas Canada, July, 1852.]

EXPEDITIOUS GROWTH OF CUCUMBERS.

The gardener of a gentleman, living near Burford, being in want of some manure, obtained leave to cut some coarse grass and weeds in the park, of which he made a bed; he then covered it with a small quantity of dung. On the 28th of February he fixed two glasses over the hotbed, and transplanted two young plants from the pots to this hotbed.

[Assembly, No. 133.]

On the 27th of March he picked a cucumber eleven and a half inches long. On the 29th, one of sixteen inches long. On the 30th, one of fifteen inches long, leaving on one of thirteen inches length.

SUBJECT FOR NEXT MEETING.

The forest trees of America for timber, for shade and for ornament—sumach, new plants, the locust borer, and a remedy.

The club then adjourned to Tuesday, February 18th, at noon.

H. MEIGS, *Secretary*.

FARMERS' CLUB, *February 15, 1853.*

Present—Messrs. Tallmadge, R. L. Pell, Judge R. S. Livingston, Van Wyck, Pike, of New-Jersey, S. B. Halliday, of Providence, Gore, of New-Jersey, Dr. Underhill, of Croton Point, Dr. Church, Mr. Dickey, Mr. Archibald, and others, to thirty or forty members.

President Tallmadge in the chair. Henry Meigs, Secretary.

The President laid before the club a communication from which the following are taken. The Rev. Chauncey E. Goodrich, of Utica, has applied himself to the introduction of new sorts of potatoes with great zeal, knowledge, industry and success. His experiments have been very numerous. We make room for the most successful of them. He aimed at a renewal of that precious tuber, from the original of South America, and he states :

1. The importation of new tubers from those congenial climes of which (so far as we know,) it is a native.

2. Its reproduction from the seed-ball. Illustration of these methods, as tried.

3. Grand seedling Bogotas of 1852 ; from No. 2. Many hundred sorts ; hardy, bears seed-balls ; flesh generally much whiter than the parent ; some ten or twelve quite white, and sufficiently early for general use ; and will probably prove valuable.

4. Seedlings of a home variety, of 1849, derived from the old round yellow flesh. Of two hundred sorts, the most are hardier than the parent, and equally or more productive. A few very hardy, white flesh, and fit for general cultivation.

5. Grand seedlings of a home variety of 1852, from No. 4. Many hundreds, hardy, productive, nearly all white flesh. A large number of varieties fit for general culture. A very valuable family of seedlings.

6. Imported Chilis, light colored, of 1851; four varieties considerably alike. Hardy, bear seed balls, two of them profusely, but all mature too late to be useful here.

7. Seedlings of light-colored Chilis of 1852; from No. 6. Many hundred varieties, generally hardy; many bear seed balls, and have white flesh. About ten sorts early enough for general culture. Probably valuable.

8. Red Chili, imported, 1851; hardy, tolerably productive, fine white flesh, matures in season. For some reason not very eatable. Bears no flowers.

9. Rough purple Chili, imported, 1851; this very valuable variety was imported with the preceding. For hardiness, productiveness, and fine table qualities, it has no equal in the circle of my knowledge. I have elsewhere, and formerly, called it the rough red Chili. It bears seed balls moderately.

10. Seedlings of the rough purple Chili, 1852; from the preceding. Nearly all inherit the white fine flesh, hardiness and productiveness of the parent, while many of them are much more shapely. These are invaluable.

11 and 12. Two imported red Chilis of 1851; hardy, but not early enough for use. One of them bears seed balls enormously.

13. Seedlings of the yam potato of 1852; very hardy, shapely and productive. A very few, out of many hundreds, are white flesh, and valuable for culture.

14. Seedlings of an Oregon variety, of 1853. Many of them hardy, fine shape and flesh. Valuable.

In order to re-imburse himself for heavy expenses, the reverend gentleman is obliged to charge something for his new potatoes.

For his rough purple Chilis, ten dollars a year. This kind yielded ninety-two potatoes for one, last year, very fine quality. Some cultivated last year, by Mr. Delafield of Geneva, (near it,) yielded one hundred and twelve pounds weight for one pound.

Seedlings of 1849 are hardy, productive and good. Price seven dollars a barrel, or three dollars a bushel. The State Society has tested them this year. They yielded from twenty to sixty-four pounds weight for one.

Seedlings of 1852 are several choice kinds selected from four thousand two hundred varieties, grown from seed balls, mostly of the last mentioned potatoes. This selection was made with great care as to their heaviness, flesh, yield and mode of growth, and they afford a basis, it is believed, for the entire renewal of the potato crop in our country. My price for them is ten dollars a bushel.

My potato seed is from the balls of my best varieties mentioned. It has been tested, and is now warranted to yield a very large proportion of hardy, productive, and shapely sorts. My price is one dollar a paper, each containing more than one thousand seeds, and with directions for cultivating them. They will be sent by mail to order, postage paid. Each sort is put up separate.

The Secretary said, in reference to

THE JAPAN PEA,

One of the extensive class of fabaceæ, consisting of more than three thousand varieties, according to Lindley, in his Vegetable Kingdom: The following are from Japan—*Dolichos hirsutus*, *lineatus*, *incurvus*, *angularis*, (hairy beans); *cultratus*, *umbellatus*, (sharpened.)

Dolichos (Greek) means long. The pea grown by A. H. Ernst, of Cincinnati, is not hitherto known, and is not in the above list.

Mr. R. L. Pell remarked on the

FOREST TREES OF AMERICA AND THEIR USES.

Among those the white oak, *Quercus Alba*, is justly esteemed beyond all others, and is used in preference to any for the keel trunnels, side planks and frames of ships, being exceedingly tough, strong, and easy to bend, but not easily admitting water. They grow well upon gravelly soil, and equally so on a moist clay, which most trees fail to flourish upon. Shipwrights generally agree that the European white oak, is tougher and far more lasting than the American; the grain of the former is closer than the latter, still it is so much prized abroad, that immense quantities are annually shipped to England; in half a century I fear it will be considered our rarest tree. Oaks set out for timber trees, must not be planted nearer each other than thirty-five feet, and should be well staked to protect them from the action of the winds, and surrounded with thorns, or a frame to prevent cattle or sheep from rubbing against them, as the oil contained in their hair, or wool, is poisonous to them before well established. The best oak timber is that found in a cold aspect, exposed to bleak winds. Chiron made Achilles' spear of a tree thus grown. In transplanting, the fibres and spongioles must be protected with the dirt adhering to them; they are the mouths through which the nourishment is drawn in to maintain it. The large roots are only useful to sustain the stem. The position of the tree before removal must be particularly observed, as the part facing the south is much more dilated, as appears in their horizontal sections, by the excentricity of their hyperbolical circles, being, on transplantation, turned to the north, destroys the tree five times out of ten.

LIVE OAK (*QUERCUS VIRENS*).

A very valuable species, growing on the coasts of several of our southern states, within twenty miles of the sea. This tree frequently reaches the height of fifty feet, but rarely over that; in a few instances trunks have been discovered twenty-three feet in circumference. At a distance from the observer, when standing alone, it resembles an apple tree. Its numerous limbs produce an

immense number of knees, used in ship building. Much of this timber finds its way to England ; this is to be regretted ; in sixty years it will be extinct.

Besides these there are twenty-five other oaks, according to Michaux, named as follows :

Mossy Cup oak,.....	Quercus	olivæformis.
Over-cup White oak,....	—	microcarpa.
Post oak,.....	—	obtusiloba.
Over-cup oak,.....	—	lyrata.
Small Chestnut oak,....	—	prinus chincapin.
Yellow oak,.....	—	— acuminata.
Swamp White oak,	—	— discolor.
Chestnut White oak,....	—	— palustris.
Cork oak,.....	—	suber.
Running oak,.....	—	pumila.
Willow oak,	—	phellos.
Upland Willow oak,	—	cinereæ.
Laurel oak,	—	imbricaria.
Bear oak,	—	banisteri.
Black Jack oak,.....	—	ferruginia.
Water oak,.....	—	aquatica.
Barham oak,.....	—	heterophylla.
Scarlet oak,	—	coccinia.
Grey oak,.....	—	ambigua.
Black oak,	—	tinctoria.
Pin oak,	—	palustris.
Red oak,.....	—	subra
Spanish oak,	—	falcata.
Barren Scrub oak,.....	—	catesbæi.
Rock Chestnut oak,	—	prinus monticola.

There are likewise twenty-six South American and Mexican oaks, named by F. Bush, growing from 10 to 60 feet high.

ULMUS (THE ELM).

Is one of the easiest trees known to us to remove or transplant. When twenty years old they may be removed with complete success, provided you cut off all the branches, except the extreme

top, and water the tree thoroughly when planted ; in a few years it will surprise you by its wonderful growth. It delights in a fertile, moist, loamy soil ; still it prospers in gravel, but particularly abhors a dry sand. I don't know a more singular timber than the elm ; it bears two extremes admirably, and may either be kept continually dry or wet, consequently it is used for mills, water works, pipes, pumps, ship planks on the bottom of vessels, aqueducts, etc. and has been found buried in bogs for centuries, and then polished to appear like the finest ebony. It is used by wheelwrights for hubs, axle-trees ; by carpenters for handles, dressers ; by butchers for chopping blocks ; by sextons for coffins ; by hat makers for hat blocks ; and by carvers. The leaves may be stripped off for feeding cattle on in winter ; they prefer them to oats, and will grow fat upon them. The poet said, *fecundæ frondibus ulni*—fruitful in leaves, the elm. The green leaves, when crushed, will heal a recent wound or cut immediately. The tree is incomparable for shade, and Virgil says they may be engrafted upon the oak. Both these trees, when required for use should be cut in November or December ; so cut, even sapplings will last without decay as long as the heart of old trees. There are five varieties, the white, *Ulmus Americana*, Wahoo, *Ulmus Alata*, Common, *Ulmus Campestris*, Red, *Ulmus Rubra*, Dutch Elm, *Ulmus Suberosa*.

(THE BIRCH, *BETULA*.)

Is a tree of easy culture, and grows readily on the most barren and forbidding soil, whether it be dry, wet, sandy, marshy or stony, high or low, it is all the same. It is not considered of any value as timber, still is put to various uses, such as the manufacture of brooms, ox-yokes, hoops, baskets, arrows, dishes, bowls, ladles, canoes, buckets and various other domestic utensils. The inner silky bark was much used in former times to write upon, before paper was invented—and the outer bark served as covers for houses before slates and tiles were known. The roots are sometimes exceedingly curious. I have seen them representing birds, beasts and other forms ; the mould taken from hollow, decayed birch trees, is capital for raising rare and tender plants. If tapped in spring, a clear and limpid liquor flows from the tree,

which may be converted into a delicious mead. It possesses many of the virtues of the spirit of salt, free from its acrimony. A wine may be made from birch juice, which it is supposed will cure consumption. It is so volatile that it cannot be preserved in stone bottles, still when taken, is perfectly harmless, and a sharpener of the appetite. There are six Birches, Black Birch, *Betula Lenta*; Yellow Birch, *Lutea*; Red Birch, *Rubra*; Canoe Birch, *Papyracea*; White Birch, *Populi Folia*; Common Birch, *Alba*.

THE BEECH, (*FAGUS*.)

This is a fine spreading noble shade tree, furnished with glistening deep green leaves, which may be gathered in the fall before frost, and used for mattresses in lieu of straw, they lie much looser together than it does, and remains sweet for eight years, without becoming musty. I have slept upon them in Switzerland, and found them extremely refreshing. The leaves when chewed will cure inflamed gums, and cause the teeth to become quite white. Stagnant water found in the hollows of decaying beech trees, is said to be a cure for sores, scabs, bruises and wounds, not only in man but beast. The wood serves many useful purposes, and is converted into dishes, buckets, screws, chairs, bedsteads, spade handles, &c. The bark is frequently used by fishermen as floats, instead of corks, being far cheaper. Under water the timber will last for centuries. Bees prefer the hollow beech before all other trees, and swine will at all times leave corn for beech nuts. Chios endured a long siege, and his whole army lived upon beech nuts, ground in'o flour and made into bread; the oil from these nuts is rich and delicious. The huge *Argo* was built of this wood.

THE CHESNUT, (*CASTANEA*.)

The chesnut ranks among forest trees next to the oak and is particularly sought after by the carpenter for mill timber, water works, frames for houses, poles for grapes, posts for gates, wine vessels—and when well oiled, makes a lasting and exceedingly durable table. Plantations of this valuable tree should be planted, as they are fast diminishing throughout our country, being used extensively for fencing. They are easily grown from the nut thus: collect them just before they begin to fall by threshing the

trees with poles, which is of service to them ; spread the nuts on a floor to sweat ; when they become dry, cover them with sand, and let them remain thus for twenty days ; then cast them in water, reject those that float upon the surface and plant the balance after soaking one night in new milk as you would tulips, with the point up ; do not remove them under two years, and permit that time to pass between each transplanting ; when set in the plantation firmly, their own leaves will afford them sufficient nourishment—they bear cold, bleak exposures admirably.

Flour made from chesnuts is very nutritious and much used in foreign countries for bread. Mixed with honey it is considered a remedy for blood spitting, and deep seated coughs. The bark boiled in water will color red.

THE ASH, (*FRAXINUS*.)

The timber of this tree is in universal use, and I know not what the husbandman would do without it. His carts, ploughs, harrows, carriage poles, axle trees, handles for tools, &c., are made with this valuable wood, It is equally useful to the mariner. For his blocks, pulleys and oars he is indebted to it, as it will not split when morticed and tenoned. It has a natural spring and elasticity which caused it to be used for bows, spears and pikes by our forefathers in time of war.

An oil is extracted from it which has been supposed to cure deafness, by being poured warm into the ears, toothache, spleen, &c. It is not considered a good shade tree, from the fact that certain insects inhabit it. December is the proper month to cut this timber in, when the sap is at rest.

The ash, like the cork tree, will grow after the bark has been entirely stript off. There are seven varieties, the White ash, (*Fraxinus Americana*), Common ash, Excelsior blue ash, (*Quadrangulata*), Carolinian ash, (*Plati carpa*), Black ash, (*Sambucifolia*), Red ash, (*Tomentosa*).

THE MAPLE, (ACER.)

This tree is justly held in very high estimation, particularly the bird's-eye which resembles a peacock's tail, and is extremely pretty. It is only the tops of old trees that take on these beautiful undulations, consequently the hard maple and the bird's-eye are synonymous; they are produced from seeds, which must be buried one year before they grow, in a dry rich upland soil. It may likewise grown by suckers and layers.

The timber is preferred by the turner to beech; he fashions it into cups, dishes, trays, tables, and the joiner into panel work, doors, musical instruments, &c. The grain in fineness of texture may almost compare with the cedar. Cicero paid for a table made of maple six hundred dollars; King Juba nine hundred; another in those days was valued at eight thousand four hundred dollars, and still another at its weight in gold. This last was four and a half feet in diameter, and three inches thick. For polishing this wood, a man's hand directly from the bath is better than any cloth.

The undulations of the curled or bird's-eye maple is probably caused by the ascent and descent of sap, being diverted by the numerous branches projecting from the trunk: There are nine varieties, viz: the mountain maple (*acer montanum*), box elder (*acer negundo*), sugar maple (*acer saccharinum*), black sugar maple (*acer nigrum*), Norway maple (*acer platanoidea*), sycamore (*acer psuedo-platanus*), moose wood (*acer striatum*), white maple (*acer eriocarpum*), red flowering maple (*acer rubrum*).

THE BLACK WALNUT (JUGLANS),

Is a magnificent tree when it arrives at maturity. It grows best in a dry rich loam, in a protected situation. It may be grown in open prairie or pasture fields, at sixty or seventy feet apart, as it is not supposed capable of injuring the crop, which appears to grow better under it. The roots spread themselves out beyond the reach of the plough. In Germany this tree is considered so valuable that if one dies, or is cut down, another is immediately planted in its place. No young German farmer is permitted by

the authorities to marry a wife, unless he can prove that he has planted a certain number of walnut trees. This wood is much used among us by cabinet makers, for various articles of furniture, and in our churches for wainscoting and pews. They afford a magnificent and ornamental tree for a lawn or avenue, and should be planted certainly not less than sixty feet apart, even along a road, as the branches and roots extend a great distance. The nuts are delicious as a dessert, and from it is extracted an oil fit for frying food in, or burning in lamps. One bushel of nuts yields fifteen pounds of kernels, and they seven and a half pounds of oil. The husks of the nut and leaves of the tree may be boiled slightly, and the liquor poured upon grass plats overrun with insects and worms, all of which will be immediately killed, without injury to the grass. The early spring buds, if taken off and dried, make a capital pepper. The nuts may be preserved for winter consumption in their own leaves, or if buried, they will keep perfectly for a year, and come out of the ground as plump in kernel as when placed in it. In Italy, when a countryman has a pain in his side, he at once drinks a pint of nut oil, and is cured. The juice of the rind of the nut will make a gargle that will cure a sore throat. If a vessel leaks, rub a kernel upon it, and it will remedy the evil quicker than pitch or wax. Nuts are particularly indigestible unless the brown skin covering the kernel is taken off. It resists the gastric juice of the stomach, causing various indispositions that we are frequently at a loss to account for.

There are eleven varieties of the walnuts :

Mockernut hickory	Juglans tomentosa.
Water butternut hickory	do aquatica.
Common walnut	do regia.
Butternut	do cathartica.
Black walnut	do nigra.
Pacanenut hickory	do olivæ formis.
Bitternut hickory	do amara.
Nutmeg hickory	do myristicæ formis.
Shellbark hickory	do squamosa.
Thick shellbark hickory	do laciniosa.

LINDEN (TILIA).

There are two kinds of this beautiful tree. The male, which is very knotty and of a red color, produces neither flower nor seed, whereas the female blossoms odoriferously, perfuming the air for a great distance. Though they are of both sexes, they differ entirely in form. They may be raised from seeds or suckers, layers or branches; you may even peel off a strip of bark, leaving it attached by a small portion to the mother tree, and cover it with earth at a distance therefrom, and it will grow. In a rich loam the linden will make the most rapid and astonishing growth. It has an upright trunk, smooth bark, beautiful leaf, fragrant blossom, and forms an almost impervious shade. Trees the size of a man's body may be moved even in the month of July, if proper care and attention is bestowed upon the operation. The timber is strong and light, and is frequently turned into boxes for the use of druggists; architects use it for models of buildings; baskets are made of the twigs; the ancients used the smooth side of the bark for writing tablets; the Grecians made bottles, pumps for ships, and lattices for windows of it. The berries, when reduced to a powder, immediately stop excessive bleeding at the nose; the bruised bark is an admirable application to wounds, and the sap, distilled, is recommended in cases of disease of the heart, vertigo, apoplexy, &c.

THE ALDER (ALNUS).

This tree is peculiarly adapted to moist boggy land, where it grows luxuriantly, and may be planted in two feet lengths, plunged in the mud, where it at once takes root, and rapidly forms a tree. This timber lasts under water almost equal to stone. In Italy it is generally used for piling to build upon, and was highly commended in the days of Vitruvius. The Rialto at Venice is built upon alder piling. Tanners, dyers and leather dressers use the bark, which likewise makes an admirable ink. There are three varieties, the common alder (*alnus serulata*), European alder (*alnus glutinosa*), black alder (*alnus glauca*).

THE CEDAR.

This is one of the most wonderful of all the tree tribe in several respects. It endures many extremes of heat and cold, and is found enjoying the moist climate of the Barbadoes. The hot and sultry Bermudas, and the cold and changeable region we inhabit, as well as the mountain of Asia. In the temple of Apollo at Utica, there was to be found cedar timber over two thousand years old. The Sittim, made mention of in the Bible, is supposed to have been cedar, from which the precious utensils were made; when they said a thing was cedro digna, the meaning was, worthy of eternity.

THE PINE (PINUS).

This fine tree is one of two sexes, male and female; the male is a looser growing tree than the female, and far more knotty; in transplanting, great care should be taken never to shorten in the head, or cut off the branches; if the root become bruised, it is far better to sear the ends with a hot iron, rather than cut them, as this bleeding not unfrequently destroys the plant. Most of Venice and Amsterdam are built upon piles of a species of pine, and there are 13,659 huge sticks under the Stadt House at Amsterdam, which cost almost as much money as the superstructure. The bark of the pine tree heals sores; the inner rind cut small and boiled, is a good remedy for burns, scalds, and frozen limbs. The timber is much used for shingles, bottles, wine vessels, and in buildings of all descriptions; the vast beams, sustaining the roof of St. Peter's church, at Rome, are pine, and were placed there in the year 336, by Constantine. Tar is made of the sap of this tree, and from it turpentine, rosin, pitch and various concretes.

There are twelve pines:

Longleaved Pine,	Pinus australis.
Jersey Pine,	do moss.
Yellow Pine,	do mitis.
Loblolly Pine,	do tæda.
White Pine,	do strobas.
Wild Pine,	do sylvestris.
Pond Pine,	do serotinia.

Grey Pine,.....	Pinus rupestris.
Red Pine,.....	do rubra.
Pitch Pine,.....	do rigida.
Table Mountain,.....	do pungens.
Stone Pine,.....	do pinca.

SHELLBARK HICKORY (*JUGLANS SQUAMOSA*).

The disposition of this tree's bark, has given to it the name it bears. It enjoys a low, moist soil, that is occasionally overflowed by water. In its vicinity you will generally find the white oak, buttonwood, red maple, &c. I name this variety, because of all its species it grows to the most towering height, frequently ninety feet. In the spring it throws out its leaves with such rapidity, that in one month they are of full size, often nineteen inches long. The wood is tenacious, elastic, and strong, generally splitting straight, and is employed for keels of ships, whip handles and baskets. The strong pellicle that envelopes the kernel of this nut should be taken off, before eating, as it is indigestible and apt to adhere to the coating of the stomach.

BUTTERNUT (*JUGLANS CATHARTICA*).

This fine tree is known by several names; in New York, for instance, it is called butternut; in the eastern States, oil nut; in Ohio, the white walnut. The branches spread widely in a horizontal direction, and present a singular appearance. The nut is rich in oil, which was formerly expressed by the Indians, and used in their food. Butternut bark boiled, made into a decoction and sweetened with honey, is an excellent cathartic. Sugar may be obtained from the sap of this tree by evaporation. The outer skin, covering the seed of this nut, likewise resists the solvents of the stomach.

TULIP TREE (*LIRIODENDRUM TULIPIFERA*).

This very beautiful tree grows to a height, frequently 140 feet and 23 feet in circumference. It is exceeding straight, and the foliage beautiful. This wood is much used for panels of coaches, trunks, &c., and is capable of receiving a high polish; a decoction is made from the roots, which is used in intermittent fevers, cholera infantum, &c., and the bark reduced to a powder, is often given to horses for worms.

BUTTONWOOD (*PLATANUS OCCIDENTALIS*).

Presents, when growing luxuriantly by itself, a most magnificent appearance, and is remarkable for the amplitude of its immense branches. It is known by many names, for example, in New-York is buttonwood ; in Ohio, sycamore ; in Virginia, water beech ; in Canada, cotton tree, and by others the plane tree.

COMMON LOCUST (*ROBINIA PSEUDO ACACIA*.)

The locust grows in some situations 93 feet high, and ranks among our most superior timber trees. It enjoys a rich sandy loam in a sheltered situation, and is much used by ship carpenters, being considered by them as durable as any of the oaks. As its grows old, it increases in durability. For fence posts it is superior to all other timber ; the grain is fine, almost equal to boxwood, instead of which it is frequently used by cabinet makers. No park or lawn should be without this beautiful and highly ornamented tree.

THE WILD CHERRY (*CERASUS AVIUM*)

Frequently grows to the height of sixty feet, and is an exceedingly picturesque tree. The wood is reddish, strong and close grained, capable of a high polish, and much sought after by cabinet makers. In France wine casks are made of it, as it is imagined to improve the wine. I have a tree on my farm, eighty feet high, and seventeen feet in circumference. The lamented Downing remarked, when he saw it, that it was the finest specimen he had ever seen. All fruit farms should possess this tree, as it affords food for multitudes of birds, and they devour countless millions of insects. A poisonous substance is made by distilling the leaves, known as the laurel water. They are supposed to be injurious to stock.

THE MULBERRY (*MORUS*.)

The fruit and leaves of this admirable and exceedingly valuable tree, do not receive with us the attention they deservedly enjoy in many parts of the world, because we do not understand the incomparable benefit of it. In Europe the leaves are fed to the silk worm, and the joiner and carpenter consider its wood sufficiently durable to make bows, hoops, wheels, ribs for small vessels, &c.,

and will last under water equal to oak. In Italy, single trees have been rented for five dollars per season, and have produced seven pounds of silk in six weeks, worth thirty-five dollars. The Italians manufactured silk one thousand years before the tree was introduced into France for that purpose. Henry IV filled the public highways, gardens, and parks with mulberry trees. The revenue of this nation from silk is now perfectly incredible; we pay her many millions per annum; all of which might be saved to our country, and as many millions exported, if our government would lend agriculturists assistance. Our climate is better adapted than any other under the sun, which is proved from the fact, that in all other countries it is necessary to hatch the worm by artificial means, whereas here we are compelled to keep the eggs in an ice house, to prevent them from hatching before the leaves are grown. The leaves, besides nourishing the silk worm, are an admirable food for sheep, cows, calves and horses, all of which animals will eat them in preference to grass; and boiled with bran, they will fatten hogs rapidly. The fruit is much enjoyed by poultry, and if eaten by man, when perfectly ripe, before breakfast in the morning, will cure ulcers, inflammations of the mouth and throat, besides relaxing the stomach. I might give some valuable practical hints respecting the culture of the tree, feeding the worm, &c., having been the first in this country to feed in the open air with marked success; this, however, is not connected with our present subject, therefore I will leave it to some more fitting opportunity. Our railroad proprietors should plant them on each side of their railroad tracks. The time will come when they will be appreciated.

PAULOWNIA IMPERIALIS.

This is a fine, fast-growing, and exceedingly beautiful tree, of recent introduction into our country. I obtained it soon after, and found it easy of cultivation, growing readily from pieces of root, cuttings, &c., and producing a very pretty blue flower, in favorable situations.

During the past summer a severe gale of wind swept my first specimen even with the surface of the ground. On the first day of July several shoots sprang up from the root, and on the

first day of August, three of them were fourteen feet high, producing leaves two and a half feet long and two feet wide. It suffers no kind of vermin to breed upon it, nor dares any caterpillar to attack it. When our citizens come to understand the incomparable benefit of this magnificent tree, for streets, avenues, and parks, the industrious cultivator will have his hands full to meet the demand for it.

OF THE POPLARS.

There are ten, viz: Carolina Poplar, (*Populus angutata*,) Cotton Tree, (*Populus argentea*,) Balsam Poplar, (*Populus balsamifera*,) Heart-leaved Poplar, (*Populus canadensis*,) Grey Poplar, (*Populus canadensis*,) Large American Aspen, (*Populus grandidentata*,) American Black Poplar, (*Populus hudsonica*,) Virginian Poplar, (*Populus monilifera*,) American Aspen, (*Populus tremuloides*)

MAGNOLIAS,

There are seven: Big Laurel, (*Magnolia grandiflora*,) Small White Bay, (*Magnolia glauca*,) Cucumqua tree, (*Magnolia cordata*,) Large Leaved Umbrella tree, (*Magnolia macrophylla*,) Long Leaved Cucumber tree, (*Magnolia auriculata*,) Umbrella tree, (*Magnolia tripetala*.)

We have the

White Spruce,.....	<i>Abies alba</i> .
Silver Fir,	do <i>balsamifera</i>
Henlock Spruce,	do <i>canadensis</i> .
Black or Double Spruce,	do <i>nigra</i> .
Norway Spruce,.....	do <i>picea</i> .
Catalpa.....	<i>Bignonia catalpa</i> .
Iron Wood.....	<i>Carpinus ostrya</i> .
American Hornbean.....	do <i>Americana</i> .
Cypress.....	<i>Cypressus disticha</i> .
White Cedar.....	do <i>thugordes</i> .
Water Locust.....	<i>Gleditsia monosperma</i> .
Sweet Locust.....	do <i>triacanthos</i> .
Coffee Tree.....	<i>Gymnocladus canadensis</i> .
American Holly.....	<i>Ilex opaca</i> .
Sassafras.....	<i>Laurus sassafras</i> .

Sweet Gum.....	Liquidamber styraciflua.
Black Gum.....	Nyssa sylvatica.
Large Tupelo.....	do grandidentata.
Sour Tupelo.....	do capitata.
Devil Wood.....	Olea Americana.
Buckeye.....	Pavia tutea.
Champlain Willow.....	Salix ligustrina.
Shining Willow.....	do lucida.
Black Willow.....	do nigra.
Basswood.....	Silia Americana.
White Lime Tree.....	do alba.
Downy Lime Tree.....	do pubescens.

There are historical accounts of many very curious trees growing in different parts of the world, and one recently compiled by Mr. Hall, of the Commercial Advertiser, names :

The great *Chestnut* tree on Mount Ætna, said to be 196 feet in circumference, near the surface of the ground.

The *Dwarf* tree, near Cape Horn, 2 inches high, with branches spreading four feet along the ground.

The *Ivory Nut* tree, or the *Tagua* plant, common in South America, and belonging to the palm tribe. It is used by the natives to cover their cottages, and from the nuts buttons are made. In an early stage, the nuts contain a sweet milky liquid, which solidifies and becomes almost equal to ivory.

Brazil Nut tree grows to the height of from fifty to eighty feet, and is a very majestic tree. The fruit, in its natural position, is like a cocoa nut, each one containing from twelve to twenty triangular nuts packed together. When the natives gather these, they hold wooden buckets over their heads.

The *Cannon Ball* tree grows to the height of sixty feet, and its flowers are remarkable for beauty and fragrance ; they are crimson, and grow in large bunches. The fruit resembles enormous cannon balls, which burst and make a loud noise. From the shell domestic utensils are made, and the contents contain several acids, besides sugar and gum, which furnishes materials for an excellent

drink in sickness, before it is perfectly ripe. When it reaches that stage, a dose of it is exceedingly unpleasant.

The *Sorrowful Tree*, near Bombay. There is a singular vegetable known as the sorrowful tree, so called because it only flourishes in the night. At sunset no flower is to be seen, and yet, half an hour after, it is full of them. They smell sweet, but the sun no sooner begins to shine than some of them fall off and others close up, and thus it continues flowering in the night all the year.

The *Cow Tree*.—This is a native of Venezuela, South America. Baron Von Humboldt thus describes it: On the bare flank of a rock, grows a tree with dry and leathery leaves; its large woody roots can scarcely penetrate into the stony soil. For several months in the year, not a single shower moistens its foliage. Its branches appear dead and dried, yet as soon as the trunk is pierced, there flows from it a sweet and nourishing milk. It is at sunrise that this vegetable fountain is most abundant. The natives are then to be seen hastening from all quarters, furnished with large bowls to receive the milk, which grows yellow and thickens at the surface. Some drain their bowls under the tree, while others carry home the milk to their children. It is obtained by making incisions in the trunk.

The *Bread Fruit Tree*.—This tree is found on the islands of the Pacific Ocean. The trunk rises to the height of from thirty to forty feet, and attains the size of a man's body. The fruit grows about the size of a child's head. When used for food, it is gathered before it is fully ripe, and baked among ashes, when it becomes a wholesome bread, and in taste somewhat resembles fresh wheat bread. This tree supplies the natives with bread, timber for their houses and canoes. The gum which exudes from it serves as pitch for the vessels, and from the fibres of the inner bark a cloth is made to cover their persons.

The *Upas Tree*.—For ages it was believed that a tree existed in the East Indies, which shed a poisonous and deadly influence upon all animals that reposed under its branches; and that so fatal were its effects, that birds attempting to fly near it fell to the ground and perished. For a long time it was supposed that such

a tree did not exist. But a few years since a tree was discovered in the East Indies, which, it is believed, gave rise to the wonderful accounts of the Upas tree. It was growing in a location where there was a constant collection of carbonic acid gas. Consequently all animals that came near it, inhaled this gas and died. There is a tree on the Isthmus of Darien, which appears to have a similar effect upon animal life.

The Tallow Tree.—This tree is found in China. It is called the tallow tree because a substance is obtained from it resembling tallow, and which is used for the same purpose. It grows from twenty to forty feet high.

Lace-bark Tree.—In the West Indies is found a tree, the inner bark of which resembles lace, or net-work. This bark is very beautiful, consisting of layers which may be pulled out into a fine white web, three or four feet wide. It is sometimes used for ladies' dresses.

The Varnish Tree, from which the black Japan varnish is obtained, grows wild in China and Japan. It somewhat resembles our ash. When these trees are seven or eight years old, they are capable of supplying varnish. A single man can attend fifty trees, which yield a pound of varnish each every night.

There is a property in the varnish which operates injuriously to the workmen, causing an inflammation to spread over their bodies, and their heads to swell. To prevent these effects, they rub their bodies with oil before going to work, besides preparing themselves with a course of medicine. In addition to these precautions, they wrap their heads in cloth and dress themselves in leather.

All trees are liable to infirmities of various kinds, and an old author mentions, among others, in rhyme :

The calf, the wind-shock and the knot,
The canker, scab, scurf, sap and rot.

When your plantations are set out, they must be entirely free from weeds, which should be carefully pulled after every rain.

Suckers must be separated from the mother roots with a sharp knife or spade, and if carefully accomplished, may be transplant-

ed. Still I think it a bad plan, as suckers are more apt to produce suckers than good straight stocks. If the ground is naturally wet, it must be thoroughly drained, and even if it be dry, draining, will improve it by admitting air, and carrying off any substance that may occupy the ground to the detriment of the growing plant.

Bark-bound trees must be released by the use of a sharp knife, which must enter above and be drawn down to the root, penetrating to the hard wood on two sides of the tree; if it opens much, fill the interstices with fresh cow manure; this operation may be performed in February. All small dead or blasted branches should be cut off near the trunk, and the wound covered with paint or manure. Such blights are sometimes caused by lightning, but more frequently from the hard baked ground contiguous to the tree, which should always be kept loose and pliable.

Worms frequently cause diseases in trees by domiciliating themselves between the bark and the wood. Their occupation is indicated by the woodpecker. Immediate recourse must be had to the knife, or pointed wire, and his wormship must be ejected, and the wound filled with clay.

Long and continued drought frequently burns and scorches a tree to such an extent that it becomes lousy. This may be cured by boring a hole in the principal root, fill the space with brandy, and plug it up with a spile made of the same wood.

Crooked trees may always be made straight, by cutting off the preponderating branches while in full leaf.

Trees that are bark-bound may be saved by training a shoot from the root, and inserting it in the green bark above; or if only girdled on three sides, a piece or pieces of bark from the same kind of tree may be cleverly fitted to the bark above and below. If well done, in three weeks the parts will unite.

Mice frequently bark trees in hard winters. This may be prevented by brushing the tree near the ground late in the fall, and occasionally during winter if opportunity occurs, with *stercus humanum* diluted in water, or tanners' liquor, which is the most cleanly.

Moss must be kept off all trees, both forest and fruit. The proper time to eradicate it is after a hard and soaking rain. It yields readily to a hair cloth or coarse crash.

Old trees are subject to hollowness, canker, snails, hornets, &c. Hollowness is caused by careless trimming, or by permitting a branch to be broken off by the wind, and allowing the rough parts to be exposed to the elements; the rain enters, and in due course of time decays the interior. If large limbs are broken by the wind, they should be neatly cut some distance from the trunk, and the end painted, or covered with grafting wax. Hollow trees may be filled with a mixture of hay, horse dung and clay.

Canker on trees is caused by a wound, or by burning sandy land. They must be cut out and the orifice well filled with tar and oil in combination, and the whole covered with hay manure bound round with a cloth. If, however, gangrene be inside, it can only be cured by an application of dry sulphur, or some nitrous substance.

Hornets injure hollow trees by breeding in them; they may easily be destroyed stopping up their entrance with goose dung or by the fumes of sulphur.

Moles may be driven away by inserting garlic in their hollow passages.

Mice may be destroyed by sinking barrels in various parts of your orchard, half filled with water, and covered with chaff.

Caterpillars by inserting a sponge saturated with double harts-horn into their webs when they first appear in the spring, may be thoroughly eradicated, and after the second year will entirely disappear.

I will now give you a valuable recipe for preserving timber, cordage, &c., and with it end my present long-winded discourse. Place common sulphur in a cucurbit glass, and cover it with four times its weight of strong aquafortis; distil this to dryness; the sulphur remaining in the bottom must be placed upon glass or marble, and it will dissolve into oil. This composition, rubbed

upon cables, ropes, nets, masts of ships, tables, mathematical instruments, or rarities of any kind, will tinge them with a pleasing color, which no art can wash out, and preserve them from decay and worms, either in water above or under the earth, in the snow and ice of winter, or heat and rains of summer.

The Secretary said the subject of the locust tree and its enemy, the borer, proposed for this meeting, was of great and well known importance, and he had the great pleasure now to read from the work of Dr. Harris, the Librarian of Harvard College, Cambridge, Massachusetts, on insects injurious to vegetation—the volume recently presented to this Institute by the Hon. Marshall P. Wilder, of Boston—the following excellent instructions given by the distinguished author, as to the great destroyer of locust trees.

Extract from the volume.

During the month of September the Painted Clytus, (*Clytus Pictus*,) *Leptura picta* of Drury, the *Clytus flexuosus* of Fabricius, is often seen in abundance, feeding by day upon the blossoms of the Golden Rod.

If the trunks of our common locust tree, the *Robinia Pseudacacia*, are examined at this time, a still greater number of these beetles will be found upon them, and most often paired. The habits of this insect seem to have been known as long ago as 1773 to Dr. Foster, who then described it under the name of *Leptura*, (Greek for slender,) the latter being derived from the tree which it inhabits.

Drury, however, had previously described and figured it under the specific name here adopted, which, having the priority in point of time over all others that have been subsequently imposed, must be retained. This Capricorn beetle has the form of the beautiful Maple Clytus. It is velvet black, and ornamented with transverse yellow bands, of which there are three on the head, four on the thorax, and six on the wing covers, the tips of which are also edged with yellow. The first and second bands on each wing cover are nearly straight; the third band forms the letter V, or united with the opposite one the letter W, as in the specio-

sus; the fourth is also angled, and runs upwards on the inner margin of the wing cover towards the scutel; (the scutel is a small triangular shell at the bottom and between the wings;) the fifth is broken or interrupted by a longitudinal elevated line, and the sixth is arched, and consists of three little spots. The antennae are dark brown, and the legs are rust-red. These insects vary from six-tenths of an inch to three-quarters of an inch in length.

In the month of September these beetles gather on the locust trees, where they may be seen glittering in the sunbeams, with their gorgeous livery of black velvet and gold, coursing up and down the trunks in pursuit of their mates, or to drive away their rivals, and stopping every now and then to salute those they meet with a rapid bowing of the shoulders, accompanied by a creaking sound, indicative of recognition or defiance.

Having paired, the female, attended by her partner, creeps over the bark, searching the crevices with her antennae, and dropping therein her snow-white eggs, in clusters of seven or eight together, and at intervals of five or six minutes, till her whole stock is safely stored. The eggs are soon hatched, and the grubs immediately burrow into the bark, devouring the soft inner substance that suffices for their nourishment till the approach of winter, during which they remain at rest in a torpid state. In the spring they bore into the sap wood, more or less deeply into the trunk, the general course of their winding and irregular passages being an upward direction from the place of their entrance. For a time they cast their chips out of their holes as fast as they are made, but after a while the passage becomes clogged, and the burrow more or less filled with the coarse and fibrous fragments of wood, to get rid of which the grubs are often obliged to open new holes through the bark. The seat of their operations is known by the oozing of the sap and the dropping of the saw-dust from the holes. The bark around the part attacked begins to swell, and in a few years the trunks and limbs will become disfigured and weakened by large porous tumors, caused by the efforts of the trees to repair the injuries they have suffered.

According to the observations of Gen. H. A. S. Dearborn, who has given an excellent account (in vol. 6, page 272, of the Massachusetts Agricultural Repository and Journal,) of this insect, the grubs attain their full size by the twentieth of July, soon become pupae, and are changed to beetles and leave the trees early in September. Thus the existence of this species is limited to one year.

Whitewashing and covering the trunks of the trees with grafting composition, may prevent the female from depositing her eggs upon them, but this practice cannot be carried to any great extent in plantations or large nurseries of these trees. Perhaps it will be useful to head down young trees to the ground with the view of destroying the grubs contained in them, as well as to promote a more vigorous growth. Much evil might be prevented by employing children to collect the beetles while in the act of providing for the continuation of their kind. A common black bottle, containing a little water, would be a suitable vessel to receive the beetles as fast as they were gathered, and should be emptied into the fire in order to destroy the insects. The gathering should be begun as soon as the beetles first appear, and should be continued as long as they are found on the trees—and furthermore, should be made as general business for several years in succession.

Dr Underhill, of Croton Point, observed—That much may be said in favor of introducing many noble American forest trees as ornaments and shades, and for useful purposes as timber. Why should we not line all our roads with them? I do not object to bringing fine trees from other countries, yet let us first avail ourselves of the splendid trees which abound in our great forests. Among the trees imported and now too extensively planted, there is one which I and many others consider a nuisance; that is the *Ailanthus*, the smell of its flowers is very disagreeable and I believe prejudicial to health. It should be displaced and our healthy, handsome, noble trees brought in. It is scarcely necessary for me to say that I appreciate the fine trees and plants of other countries as highly as any one. I am for making the best of our own heritage—improving all that our Creator has given us; plant the trees—care for them so that when our bones shall

have mouldered in the dust our children, and the children of the country may enjoy their beauty, their shade and their fruit. For such providence by the present generation, I would stimulate all to the exertion, and even in thirty years hence many who are here will enjoy the results of to-day.

Solon Robinson stated the remedial efficacy of the sweet gum as well ascertained, and then read from *The Agricultor*, on Sumach, &c.

CULTURE AND PREPARATION OF SUMACH.

PALERMO, May 30, 1850.

DEAR SIR:—In reply to your letter of yesterday's date, on the subject of the mode of cultivation of sumach in Sicily, I beg to submit the following remarks:—

Sumach is an article of commerce of great importance to the Sicilians, as it is also with the Americans. And it is my opinion that this article, so valuable for manufacturing purposes, for tanning, &c., can be produced in the United States in sufficient quantity to supply the world, if the mode of culture be understood and proper attention paid to it. I have no doubt that it is the same kind that grows in the United States, which there runs to the size of trees. In Sicily they plant the roots or small plants from two to three feet apart, but always in regular rows, as we do Indian corn; hills about three feet apart, rows about four, so that the plow or harrow can save the hand labor of the hoe. They hoe it two or three times before the rains, finish in May, and gather it in July and August. The leaves are the only parts made use of. After being separated from the twigs by the threshing, (or in this country both ways—by threshing and by treading off with oxen or horses,) the leaves are then ground to the state of fineness in which you see it is in the United States, being passed through sieves or bolting cloths of sufficient fineness, and put into bags of one hundred and sixty pounds each.

The proper season for planting the roots or plants is in November, December, and January. When the season is rainy, the plants take root better. The root or stump is cut off from four to

six inches above the ground. The scions or sprouts spring up four to six out of each root, and when in maturity, which in this island is in July or August, they are cut off at the stump, and laid in small handfulls (not spread out much, as the sun will turn the leaves yellow) to dry; say for a day or so; great care being taken that no rain falls on them. Perhaps in this country it may answer to plant nearer together than would be advisable in America, on account of the greater heat of the sun here, and thus shade the ground better.

The leaves are ground in mills mostly by horse power, but water or steam power would be much cheaper and better. The perpendicular running stones weigh nearly 3,000 pounds; they run double or single round an upright shaft. The nether or foundation stone is heavier and one-third greater in diameter than the running stones. The grinding surface of these latter is slightly rough, being occasionally touched with the pick or cold chisel. Hard granite stone answers; here they use a volcanic stone, which is as hard as marble. There follows round the running stones a little piece of wood, that keeps the leaves all under the stones. When ground fine enough, it is sifted or bolted in a large tight room, with a door to enter and fill the bags. In Sicily the article is more or less adulterated with spurious stuff, such as other kinds of leaves, and an article called *brucca*, which resembles the juniper bush in New England; this has no value in itself.

I believe the first year they do not cut off the sprouts. In the second and following years a curious freak of nature produces a single plant, a foot or so distant from the original root; and this little plant it is which they usually make use of to transplant. Now the plow or harrow would prevent these from growing as they would be in the track; and this may be the reason why they hoe it. Still I think the plow or harrow must be used in our country, and some way or other contrived to save these little plants, if wanted. I would recommend you to let me engage to begin with this mode of cultivating sumach. Let one or two young Sicilian farmers be hired to go to Virginia for two or three years, who understand the cultivation not only of sumach, but also of oranges,

lemons, grapes, and olives, as well as other productions of Sicily. Their wages in Sicily are from twenty-five to thirty-three cents a day and find themselves; it should perhaps be half a dollar a day in the United States. Their passage to the United States would be about \$25, or a little over; or perhaps our government would deem it of importance enough to give them a passage either in a merchant or a United States vessel. They could take with them all kinds of Sicilian wheat and other grains, and sumach plants. I can always obtain in the proper season—say December and January—20,000 if required; cost, a trifle. If the lemon and orange trees were introduced—say into Florida, they would stand the cold much better than those already introduced from Cuba, which are not of a hardy kind. I can obtain all that can be wanted for an introduction, and Sicilians to cultivate the trees. The exports of sumach to the United States last year, were 65,000 bags. Lemons and oranges, 350,000 boxes from Sicily; more than three-fourths from this port. Such is the trade in these articles alone, besides large quantities of other productions. If I can serve you or my country in any way beneficially, it will give me great pleasure to do so.

The soil of Sicily generally is a limestone formation—a reddish soil, which I think corresponds with the land in Maryland, Virginia, North and South Carolina, and the States west of those named. In Sicily, sumach is cultivated in the valleys or level grounds, or on the sides of the mountains; it requires no rain for two months before harvesting it. The soil of Sicily is so fertile, that I do not think they manure the ground at all for sumach.

We suppose that the reason of the superiority of Sicilian sumach over that of other countries, lies in the mode of cultivating it. All the leaves are the productions of the young sprouts, that spring up from the stump every year. Being so young, the leaves are full of life when cut, and have not decayed, like those of old trees. This, with a dry climate in the latter part of the season, and the soil suiting the plant, gives it the reputation it has all over Europe and America.

I am, dear sir, your obedient servant,

JOHN M. MANTON.

W. D. Porter, Esq., U. S. N., Washington.

Dr. Church agreed with Dr. Underhill, that it was not proper for the Club to indorse the medical virtues ascribed to trees.

Mr. Robinson. Said that the sumach grows large in some parts of our country. He has seen rails split from the bodies of sumach trees, for fencing.

President Tallmadge. Said its habit of growth with us is small, a bush.

Mr. Robinson. Some families in Newburgh have followed for a living—picking sumach. We import the Sicilian sumach to the amount of sixty-five thousand bags annually, from that little island.

Col. Travers, of New Jersey. Its quality is superior to that of America.

Mr. Robinson. As to planting locust trees burn heaps of brush and plant on those spots. They will grow well.

Mr. Pell. It is well known that locust seed is hard to germinate. The experiment of boring holes into the trees and putting in sulphur, has failed; it killed the trees, nine out of ten, and we cut them down.

Mr. Robinson. The naked sides of our rail roads present a naked front, which ought to bear fruit. Let them be planted instead of forest trees.

Dr. Underhill. My constant desire is to attain facts of importance—the truth alone is wanted by us. I have no prejudice against the wild cherry tree; the wood is fine for cabinet work, but its singular property of attracting caterpillars is so great, that I consider them a great injury to neighboring trees, sending forth swarms of insects. The wild cherry tree has on it a thousand caterpillars, for one on any other tree.

Mr. Pell. I think, on the contrary, that this singular attraction is highly useful, for it takes away the enemy from other trees in its vicinity.

Mr. Robinson. I like the wild cherry for this—it is a fine insect trap.

Amos Gore, of New Jersey. I have a row of wild cherry trees on my place, and they have all the worm nests to themselves.

Dr. Underhill. Who takes the trouble to destroy the nests? Before I destroyed my wild cherry trees, I had plenty of caterpillars; but now I have not one, where I had a thousand. The butterfly from the cherry goes to other trees to deposit eggs.

Mr. Van Wyck thought Dr. Underhill correct in several of his positions, especially the one relating to the great resources of our own country, in the number and variety of its forest trees. This, whether for shade, ornament, timber, or usefulness in any way, our people, as he truly observed, or at least some of them, are too fond of sending abroad to foreign countries for different articles, as well as plants, merely to have it said, or this no doubt influences some, that they came from such a great man's estate, grounds or gardens. In such a case they cannot be common, as it will not be in the power of every one to import or have them, and many would not have them at any rate. Thus they become fashionable for a time, on account of their rarity. Our forest trees, many of them, will compare, for beauty, ornament and use, with any country in the world for all these purposes. Take every section of our nation, from Maine to Texas, and the mighty West—all that is wanting is a disposition in our people to transplant, where they can do it conveniently, and procure seeds. These are easily conveyed from one locality to another, and cultivated at first with a little care and good judgment, and we should soon have our mansions, homesteads and farms enriched and adorned with our own native trees and plants. Some of these are more useful and beautiful than those of any other country. As a proof of this, other countries, and especially Europe, are continually sending for them, and have been for many years, to cultivate at home, and, by the assiduous cultivation bestowed, have succeeded, and even improved some of them.

Another good reason for preferring our own trees and plants of this kind is, that we can procure them easier and at less expense; it is a cheaper operation. Fruits are different. If we can import a very rare and fine one of these, and such as we have

not got, and its superiority well established, it is right for us to procure and cultivate it, if we see fit. As to the medicinal properties of some of our trees, it seems doubted whether they possess generally all the virtues ascribed to them. In some cases this may be true. When a plant or juices of a tree have effected the cure of one or two diseases that were considered not only very troublesome, but dangerous. Excited with pleasure from the relief received, the relieved are apt to ascribe to it more virtues than it really possesses, and set it down as a remedy for almost all complaints. The credulity of others, knowing the facts, make them fall in with this idea, and trees or plants sometimes thus get a great name for medicinal properties. The red elm (or *ulmus rubra*,) which Mr. Pell mentioned in his able essay on our native trees, which we have just heard, possesses, I believe, great medicinal virtues. Its bark, small branches and leaves, steeped in water, yield a thick and abundant mucilage, healing for most cutaneous eruptions, good for deep seated colds and coughs, and makes a soothing, refreshing drink for the system. It is called by some the slippery elm. The gum tree of the south, mentioned by Mr. Robinson, I believe also possesses important medicinal virtues.

Our time having expired, I should like the subject to be continued over to the next meeting, as there are several other of our forest trees whose very excellent qualities ought to be fully considered and pointed out. The subject is a broad one, and it is almost impossible that everything important which bears upon it can be thought of, if ever so ably discussed.

The secretary read a letter from Mr. Samuel Allen, of Morristown, New Jersey, proposing the subject of the mode of the growth of plants and the operation of fertilizers, as a subject for discussion by the club. The proposer is a plain, practical farmer, who will attend the Club to give what he knows about it, and to get the views of the Club about it. On motion, the subject was adopted for the next Tuesday, February 22d, at noon.

President Tallmadge adverted to the value of the Italian mulberry, not only as to silk, for which purpose he had united with others in importing the most improved kinds, but also as to its

uses as timber. We have some of that importation on our farm now, but our forest mulberry is a very useful timber. As a post it is one of the most lasting; as ship timber, it is also very suitable and durable. My carpenter advised the use of it for foundation timber in building, on that account. When seasoned, it becomes very hard, and is much more easy to saw than to cut. There is no tree more readily cultivated, and none more durable.

Mr. Robinson. The locust trees of our western country are not troubled by the borer. The buttonwood of our country is more valuable than is generally supposed, as timber and boards.

Mr. Pell. We often find the first locust trees of our planting fail by the borers, but when we plow between the rows, breaking up their roots, we soon see a second crop of trees which are much more free from attack. Long Island is very favorable to this tree, and it flourishes especially on lands so level that they are occasionally flooded by heavy rains. Such trees are entirely free from the borer.

The Secretary moved that the meetings be held weekly, as usual, every spring, for receiving and distributing seeds, plants, grafts, &c. Carried.

Samuel B. Halliday of Providence, Rhode Island, presented a barrel of Dover potatoes, and a bag of flesh-colored corn, for distribution. He says the potatoes are deemed the best cultivated in that region; quality good, and the yield fifteen to twenty per cent. greater than the Mercers; much less liable to rot, and sometimes not rotting at all, while other kinds were entirely lost. Growth also quick. The corn has yielded on a five acre field a fraction over eighty bushels shelled, per acre. It matures early, has a small cob, which causes it to be preferred to other kinds.

Subjects for next meeting: American Forest Trees, and the process of growth of plants, and the operation of fertilizers.

The Club then adjourned to Tuesday, February 22, at noon.

H. MEIGS, *Secretary*.

FARMERS' CLUB, *February 22, 1853.*

Present, Messrs. Tallmadge, Denison, Wellington, Church, Livingston, Warrins, R. L. Pell, Youmans, Solon Robinson, Captain Holmes, Griffing and Gore of New-Jersey, Judge Van Wyck, Geo. Dickey and Archibald.

President Tallmadge in the Chair. Henry Meigs, Secretary.

The President announced the subject for consideration to be the communication of a Jersey farmer, on "The Progress of the Growth of Vegetables, and the operation of Fertilizers," and American Forest Trees.

The Secretary then read the following paper, by farmer Robert K. Tuttle, of Morristown, enclosed to the Club by Samuel Allen, of that place.

THE PROGRESS OF THE GROWTH OF PLANTS, AND THE OPERATION OF FERTILIZERS.

The resources from which, and the means by which vegetables derive their elements, nourishment, and growth—how these are elaborated and compounded in the process of growing, and when perfected, what they really are—are questions highly interesting and important, and yet very imperfectly understood. The most current opinions and botanical theories are not well supported by facts and observations. Much, we know, has been done. Valuable discoveries have been made, and yet much error is abroad. Let us endeavor to correct error and disseminate truth—facts free from the mystification of scientific technicalities.

We have statements published by chemists, professing to be an analysis of a plant, or of some part of it, giving its elementary constituents in relative numbers, and also of the soil, by which, they say, we may know whether the soil contains the food and elements of which the plant is to be formed, and what is to be supplied. That they have not accomplished this is evident, because, in attempting to analyse, much escapes that eludes the senses, and by the very means used to separate, new compounds are formed before their primary elements can be known.

We are told also by the botanists, that the food, nourishment and elements of the plant are taken in by the roots, and ascend up to the branches in a fluid state. That the sap rises in the spring, and ascends to the branches and buds of the tree.

That the sap does not rise first from the roots is proved by the fact that the sap is first found in the branches. I have frequently seen a flow of sap in the branches, when the buds had begun to grow, and at the same time no sap would be found near the roots. The apricot has been seen in full bloom, while, at the same time the soil in which it stood was frozen solid. And I have seen, many times, logs and sticks of wood that were cut in the winter, and removed miles from their roots, yet in the spring they were full of sap, and some produced new sprouts.

Vegetables do not draw their elements and substance chiefly from the soil, as is generally supposed, because the sap does not first rise from the roots, as we have just shown, and is also proved by several other facts. We will refer to a few of these. Some fertilizers increase the product more than ten times. I have seen plaster of Paris do far more than this, and yet not impoverish the soil, but improve it; and the same may be said of ashes, guano, lime, &c. I have mowed and taken off the first crop of a meadow twenty-three years in succession, without applying any kind of fertilizers, and without any signs of impoverishment; and so the soil of the prairie and the forest have produced their annual crops ever since their first creation, without any signs of impoverishment. We will add but one more of those facts that prove that the plant does not draw much of its substance from the soil.

“Van Helmont planted a willow which weighed five pounds in a pot containing 200 pounds of earth; this he watered for five years, and at the end of that time the tree was found to weigh 169 $\frac{1}{4}$ pounds, while the earth in which it stood was found to have lost only two ounces.”

The question now arises if the plant does not draw its nourishment and primary elements chiefly from the soil, from whence do they come?*

* Liebig says: “The ultimate constituents of plants are those which form organic matter in general—namely carbon, hydrogen, nitrogen and oxygen. Carbonic acid,” he says, “is

Let us see if the Bible does not throw some light upon this question. In Genesis, second chapter, fourth and fifth verses, we find these words: "The Lord God made the earth and the heavens, and every plant of the field *before it was in the earth*, and every herb of the field *before it grew*." We see that every plant was made, that is its substance, *before it was in the earth—before it grew*. Now where was this substance, the elements of the plant before it was in the earth—before it grew? It must have been in the air. Every plant is either in a state of formation, growing, or of decomposition, or dissolution into its primary elements. The same elements that constitute and organize the plants that we see now have constituted and organized plants many times before

There is no more creation,
There is no annihilation.

Therefore, if we know where the dissolved plant goes to, we know where the new one must come from. The atmosphere must be the great store house from which the plant draws most of its substance.

The process of growing is carried on chiefly by attraction and repulsion. Several requisites are essential. The plant must be in the earth or in a moist place; water, air, warmth, light and probably electricity must be present.

The plant being organized with absorbents and exhalents in every part of it, attracts or exhales, according to its wants, by the powers of vegetable life and instinct inherent in it. So, when the plant is in the midst of its natural elements, and is most abundantly supplied with them, then it will grow in its greatest perfection. The atmosphere lying upon the ocean does not hold in solution so much of dissolved vegetable substance as that lying upon cultivated lands. Therefore, when the wind blows much from the ocean while the plant is growing, it is unfavorable; and much wind from any direction is unfavorable at such a time, especially where much manure is used. Hence bleak exposures are not so favorable. Some seasons are more favorable than others

emitted in immense quantities from many volcanoes. Hydrogen is found in water, nitrogen in the air, and the proper and inexhaustible sources of oxygen are the tropics. A stream of it is constantly proceeding from the equator toward the poles."

for the growth of certain kinds of plants; they are seen growing spontaneously in one season, in another they are not seen at all. And so also of fruit: and this is the case where there is neither too much nor too little rain. The wind being unfavorable is probably the chief cause. Fertilizers must operate in two ways, to wit: By attraction from the air, and by furnishing matter to be attracted by the plant from their substance while undergoing dissolution.

Minerals, lime, gypsum, &c., and ashes, operate chiefly by attraction. And the vegetable and animal manures, by surrounding the plant with their elements, and while being dissolved; and also by attraction from the air during fermentation and dissolution. Fermentation and subsequent dissolution cannot go on without the presence of air, warmth and moisture. Therefore manures must be at or near the surface of the soil, where they will have air, warmth and moisture; and where they may attract most from the air. A soil most suitable for the growth of a particular kind of plant, is one composed of substances having the greatest attraction for the elements of which the plant is being formed.

It may now be said, if the plant draws its substance chiefly from the air, why is the soil impoverished by continued cropping? We answer: it appears to be caused by disturbing it too frequently and leaving it bare too much. It requires covering and rest; and why does it want rest? The animal is the receptacle of vegetable life; they both require intervals of rest, because they were so constituted by their Maker. He commanded the Jews, while in a land of great fertility, to let it have intervals of rest.

We have also abundant evidence of the sustaining and renovating effect of rest to the soil, especially if covered. It requires to be covered the greater part of the time.

The native soil of the prairie and the forest is covered and preserved in its fertility. Meadows and pastures are greatly benefited by having a good covering of grass through the winter.

A soil that has been impoverished by too frequent stirring and exposure is renovated and improved by being covered for two or three years.

The soil under old buildings is equal to very rich manure.

Keep the soil well covered the greater part of the time, and let it have intervals of rest two or three years at a time after one or two years' cropping, and it will be improved, or greatly preserved in its fertility.

It is the excessive ploughing and pasturing that impoverishes the soil.

ROBERT K. TUTTLE.

Morristown, N. J., January 27, 1853.

PHYSIOLOGY AND FERTILIZERS OF PLANTS.

The President requested members to proceed with the discussion. At his request, Robert L. Pell said the constituent or elementary principles of vegetables in general are hydrogen, oxygen and charcoal. These appear to be common to all plants. There are other substances, such as lime, potash, iron and azote, which are found in plants, but as they are not common to all, they can not be considered essential to the constitution of vegetable matter. The parts which naturalists are accustomed to consider as distinct in their nature and functions, are six—the stem, or trunk; the root; the leaf; the flower; the fruit; and the seed. In many plants the root appears nearly similar in all its constituent parts and principles to the stem or trunk: so much so, that the one appears a continuation of the other.

The stem, which includes the branches, and the substantial portions of the plant, consists of three parts, the wood, the bark, and the pith. The bark is protected on the outside by an epidermis, which is composed of numerous layers of minute bladders, interspersed with longitudinal fibres. The wood lies between the bark and the pith. It is more dense than the bark, and its structure more difficult to be understood. It consists of two substances, the cellular and the ligneous. The ligneous are dried lymph ducts.

Between the bark and the wood a new ring of these ducts is formed every year, which gradually loses its softness as the cold

season advances, and by the middle of winter is condensed into a compact ring of wood.

These annual rings, visible in most plants when cut transversely, serve as a mark to determine their age. They decrease in breadth as the plant advances to maturity, and are found to be unequal in size throughout, varying as the season is favorable or otherwise.

The wood consists of two parts, the sap wood and the heart; the former nourishes the bud. It is supposed that all the saccharine matter of fruit trees is elaborated in the leaves of the preceding year, and deposited in the albumen, whence it is drawn the following spring for perfecting the flower and fruit.

Air is indispensably necessary to all plants. It enters through the cuticle. You may prove this by covering a plant with varnish, leaving the top exposed to air. During the first summer it will inevitably perish. So it is with trees covered with moss, which always throw out weak, sickly and sparse leaves, producing a small quantity of inferior fruit. To the root a plant is indebted for its stability in the earth, and partial nourishment. All roots are fibrous at their extremities, and furnished with a number of vessels for the purpose of conveying and circulating air and the juices necessary to their growth.

The leaves are essential to the existence of plants, as they will perish if totally divested of them, and droop in proportion to the quantity taken off. The upper and under surface of leaves are covered with a membrane, or their bark continued from the stalk.

The flower consists of four parts, the corolla, the pistillum, the calyx, and stamina.

The calyx is usually of a green color, and is that which surrounds and supports all the other parts of the flower. The corolla is of various colors, and variously shaped in different plants, constituting the conspicuous part of the flower. Then there are one or more petals. The stamina is the male part of the flower, designed to prepare the pollen. Each stamen consists of two parts; a fine thread which supports the anthera, and the anthera

itself, that contains within it the pollen, and when it comes to maturity, it bursts and discharges it for the impregnation of the germen. Flowers that have not the stamen, are female; such as have it, but not the pistillum, are male; those that have them both, hermaphrodite; and such as have neither, neuter. The pistillum is the female part of the flower, designed for the reception of the pollen. It consists of three parts; the style, stigma, and germen. The germen is the rudiment of the fruit accompanying the flower, but not yet arrived at maturity. The style is the part which elevates the stigma from the germen. The stigma is the top of the pistillum, and is covered with moisture for the breaking of the pollen. The pericarpum is the germen arrived at maturity. These are the constituent parts of the flower. In the case of perennial plants, every flower is formed months before it makes its appearance; for example, the rhododendrum may be examined, or you may carefully separate the coats of the tulip root in the beginning of September, and the flower which is to appear in the spring following, will be found in a small cell, formed by the innermost coats.

Fruit consists of nearly the same parts as are found in the stem; of a skin, which is a continuation of the skin of the bark, and of an outer parenchyma, which is the same substance continued from the bark, only that its vessels are larger and more succulent. Next the core there is an inner pulp; the core is no more than a hard, woody membrane, enclosing the seed, which is a deciduous part of a vegetable containing the rudiments of a new one.

The Operations of Fertilizers.—Though plants of different species may be found growing on the same soil immediately contiguous to each other, if they are burned to an ash and analysed, will be found in every instance to contain either different substances, or different proportions of the same. Grow a grain of rye and a pea together, the stem of rye will contain a large percentage of silica, and the pea none at all. Grain grown in soils unlike in composition, always contain the same earthy matter in the same proportion; the relative quantities of alumina, lime, silica, magnesia, will be the same in all. This shows plainly that the spongioles of plants possess the power of choosing from the soil those matters

which are capable of maintaining their healthful and growing condition.

Decandolle affirms that plants, like animals, have the power of selecting from their food, as it passes through their vascular system, such portions as are likely to nourish them, and of rejecting, by their roots when the sap descends, such as are unfit to contribute to their support, or would be hurtful to them if not rejected from the system. He further supposes that after a time the soil, in which a certain kind of plant grows, becomes so loaded with this rejected matter, that the same plant refuses any longer to flourish in it. And thirdly, that though injurious to the plant from which it has been derived, this rejected matter may be wholesome food to plants of a different order, and hence the advantage to be obtained from a rotation of crops. For experiment, plant a poppy in a soil that you know to be free from acetic acid, and after it comes to maturity remove it, and you will find a large quantity of the acid where it grew. I have obtained a fine crop of wheat without manure, from a field that had grown clover for three years. I attributed this to the excrementitious matter rejected by the clover, which, though injurious to it, formed an admirable enricher to the wheat, and came to the conclusion that wheat and clover may be grown alternately for an indefinite period, the excrement of the one enriching the other. Beets raised on a tobacco field, are unfit for use, being impregnated with the flavor of that detestable destroyer of men's nerves. It is a singular fact that soda and potash diminish in quantity in plants, as they advance towards perfection. The weight of potash is much greater in unripe, than ripe grapes.

When seeds germinate they give to the earth acetic acid; this immediately renders the lime it comes in contact with soluble, and returns to the plant when required to produce a desired effect; a wise contrivance of Providence, to store the soil with alkaline matters, which are generally scarce. These enter by the roots, and ascend through the proper vessels until they reach the outer surface of the leaves; after thus performing their office, they descend by the bark to the extreme ends of the roots, cast off the excrement they may contain, and recommence to circulate

again through the leaves, stem, and bark, with the new supply of liquid imbibed from the earth. This sap is supposed to irritate the capillary tubes, which are almost as fine as a hair, causing them to contract and expand, thus expelling the liquid to all parts of the plant. I imagine that electricity has more to do with the ascent and descent of sap than any other agent. The substances made use of for green manuring, are buckwheat, rye, red clover, old grass, corn, seaweed, &c. Dry vegetable substances, rye and wheat chaff, rye and wheat straw, leaves and other similar matters; decayed vegetable matter, much mixed with dried farm yard manure; peat with lime, and salt, and tanner's bark; soot, charcoal, dust, blood, flesh, wool, rags, bones, hair, horns, refuse from sugar houses, fish, pigeon, and fowls excrement, guano, of man, the sheep, pig, horse and cow. All these matters must become liquid before they can enter the roots of vegetables. Plants perspire very freely when the weather is dry, and diminish the quantity when it is humid. A sun flower weighing three pounds, has been known to perspire 22 ounces in 24 hours, where a man generally perspires about 31 ounces in the same length of time. If this perspiration of vegetables is checked in any way, they fade at once. For your amusement, place green leaves in water directly under the rays of the sun, and you will observe air bubbles collecting on them, which will finally rise to the surface and burst; if collected in a bottle, you will find the gas pure oxygen. Thus the sun matures fruits, by expelling oxygen; he changes them from sour to a mild sweet substance. Aquatic plants purify the air by absorbing hydrogen gas and yielding oxygen. The willow likewise enjoys this power in a remarkable degree, as is shown by its rapid growth in marshy places where this gas abounds. The air contained in the bladders of marine plants is much purer than common air; in situations where they abound we are indebted for the purity of the atmosphere in the day time and impurity at night. If lights were burned at night in presence of the plants, they would continue to produce pure air.

All plants have organic elements which they obtain from the earth and air. Carbon is one of these, and must enter either in a

liquid or gaseous condition, as the cellular substance of most of the plants is too delicate to admit of even an impalpable powder. The question whether the carbon comes from the earth or air, has been often discussed, and is still unsettled in many minds. I believe it is indebted to the air chiefly, and the earth to the plant, for the carbonaceous matter it contains. I have a plant that requires carbon; still when suspended in the air it grows luxuriantly, throws out its green leaves, and without water sustains itself. It can only be dependent on the air for its carbon. The first plants that grew before there was any vegetable matter in the soil were nourished entirely by the atmosphere. Tulips, hyacinths, and other plants of the bulbous root family, grow beautifully in pure water, if they are permitted to enjoy the atmosphere. Many seeds sown upon substances not containing a particle of vegetable matter, will grow into pure plants. Sow beans, for experiment, upon pounded stones or brickbats, in the air; in a short time they will grow and double their carbon. I have grown wheat upon a pane of glass, and caused it to assume a perfectly green, luxuriant, and beautiful appearance, without the aid of soil.

The oxygen, hydrogen, and ammonia of plants is probably obtained through the medium of water, chiefly, it being a compound of one oxygen to 8 hydrogen, and is more universally distributed throughout nature, than other chemical substances, and performs the most important functions to vegetable life. It partakes of three conditions—fluid, snow, and steam. In the form of fluid it becomes at least half of all plants, and as it falls in the shape of rain from the clouds, they become cleansed of all their impurities, that minister to the wants of growing plants, which will continue to take up nourishment without cessation, so long as it is adapted by fluid to circulate through their system. In the mean time the leaves are unceasingly, during sunshine, absorbing carbonic acid gas; and if any circumstance should prevent the regular supply, the plant would inevitably die. This carbonic acid gas is formed by the continual decay of vegetable matter in the soil; consequently if it is replete with vegetable substances, the roots even will enjoy a carbonic acid atmosphere, and as they drink the fluid, they must necessarily absorb more or less acid in solution. The fluid likewise takes up, as it percolates through the ground,

magnesia, soda, lime, potash, and causes them to circulate through the capillary tubes of the plant. Infuse madder and cause plants to grow in it, and then its fibrous roots will be red; still the stems do not partake of the color, showing that the organic coloring undergoes a chemical change, before it reaches them. Plants will grow in a weak solution of jelly, sugar or gum, all of which it has the power to convert into nourishing food.

Snow is supposed to be of advantage to plants in the spring, when it melts, from the fact that it possesses the power of absorbing nitrogen and oxygen, together with ammonia from the atmosphere. You may easily discover the value of snow by the following experiment.—Place a few willow cuttings in snow, water, and a like quantity in distilled water, you will find that those immersed in snow will make fine roots, whereas the others in distilled water will scarcely grow at all.

Oxalic acid is composed of oxygen and carbon. It is found in many plants, though it is not considered to aid them in their growth. This is the acid discovered in sorrel, rhubarb, and numerous other plants; sometimes combined with lime, potash, &c.

Ammonia is compounded of nitrogen and hydrogen, and is very important to all plants. It is a perfectly colorless gas, and is readily known by its penetrating smell. It will at once extinguish a lighted candle, and suffocate animals in an inconceivably short time. It readily enters into charcoal, porous vegetable matters, burned bricks and clay, and, most surprisingly into water, which will take up 6 or 700 times its bulk. It promotes the growth of vegetation in plants, by entering directly into their circulation, and to such an extent in some, that they perspire this gas freely. All vegetable substance, when distilled, is found to contain ammonia. Any manure that holds a large percentage of this valuable gas, will be found an exceedingly efficacious stimulant.

Nitrogen gas circulates through the stems of plants, and is supposed to be absorbed by the leaves and the roots. It is never found in very large quantities, as compared with other elements.

Nitric acid is found in many plants, combined with soda, lime, or magnesia, particularly in the tobacco and sun flower. It exerts an influence upon grain and grass crops, and adds much fertility to soil. Salpetre is formed by nitric acid in combination with potash. In the districts Tirhoot, Chaprah, and others in India, they obtain three crops, annually, by irrigating their fields with water impregnated with salpetre. Nitric acid, although it does not appear to form a constituent part of any solid rocks, still is found in almost all soils, particularly in hot regions, such as Africa, South America and India. In parts of these countries it prevails in such large quantities as to be detrimental to plants, forming a crust upon the soil. This generally occurs when rain seldom falls. During summers of severe and frequently recurring thunder storms, nitric acid is abundant. This accounts, in part, for the fruitful seasons we always have, when thunder storms are frequent.

The decay of vegetation forms large quantities of this acid. The mammoth cave in Kentucky yields a surprising quantity of the nitrate of lime. During our war with England, fifty or sixty men were there kept constantly collecting it. It is for this substance that the Chinese take the plaster from their walls for manure, and I cannot but think that it is equal in value to that indispensable ammonia, for all the purposes of agriculture. It enters into the circulation of the roots, ascends to the highest leaf, and becomes decomposed by the sun's rays precisely as carbonic acid does. Jas. F. W. Johnston mentions in one of his invaluable lectures on agricultural chemistry, that it is uncertain whether this acid is capable of being decomposed in the roots and stems of plants where it is excluded from the light.

All plants are known to consist of two parts, the first organic, which may readily be burned in the air; the second inorganic, which remains in the shape of ashes. The first is composed of hydrogen, nitrogen, oxygen and carbon, of which I have spoken; and the second of chlorine, that contains a large percentage of common salt, and influences the growth of plants where salt is requisite. Iodine is supposed to hasten germination in plants, but, like chlorine, if used in quantities will prove poisonous.

Sulphur has been used advantageously as a top dressing for several grasses; when burned, the fumes produce sulphuric acid, which is not only destructive to plants, but to animal life. When compounded with oxygen it forms sulphuric acid, or oil of vitriol, which is now much used by the learned agricultural chemist, Professor Mapes, in the manufacture of his world-renowned improved superphosphate of lime. It combines with lime, magnesia, soda and potash, and thus forms sulphates, which are exceedingly useful as fertilizers. If your soil is known to contain magnesia and lime, a diluted application of vitriol will be of great advantage. When sulphur comes in contact with hydrogen, it produces sulphuretted hydrogen gas, which imparts a very disagreeable odor, similar to that produced by rotten eggs, which is truly this gas. It may also be perceived in putrefied night-soil, and many other substances. Phosphorus is a solid yellow material, like wax in consistence. When combined with oxygen it burns with a blue flame; united with lime, soda and potash, it forms a phosphate, and is necessary to the healthful maturity of all plants and vegetables. Then we have carbonate of potash, the presence of which is to be discerned in nearly all plants. It will eradicate coarse grass and moss from fields, and benefit all cruciferous and leguminous vegetables. Potash is a compound substance, consisting of oxygen gas and potassium. There are also chloride of potassium, sulphate of potash, citrates of potash, oxalates of potash, and nitrates of potash; these are all found in different plants, and are necessary in agriculture. In connection with this subject may be named, but I have not time to enter into their different merits, chloride of sodium, sulphuret of sodium, soda, phosphate of soda, carbonate of soda, all of which abound in the ash of plants, and are consequently indispensable to their growth.

Next we have lime, carbonate of lime, sulphate of lime, nitrate of lime, phosphates of lime, sulphuret and chloride of calcium, all of which, except, perhaps, calcium, are indispensable to plants.

Then comes the chloride, phosphate, sulphate, nitrate and carbonate of magnesia, all forming inorganic constituents of vegeta-

bles and plants. Alumina, sulphate and phosphate, are absorbents of ammonia from the atmosphere, which they fix in the soil, ready to be taken up by plants.

Silica, silicates of soda, potash, lime, magnesia and alumina, are found in all sand stones, flint, quartz, &c., and in the ash of all plants. Oxides, sulphurets, carbonates, and sulphates of iron, are found in the ash of most plants. Oxides, carbonates, chlorides, and sulphates of manganese, exist in plants, but in less quantity than those of iron. Soils differ in their properties and constitution, chemically speaking, still they all contain more or less organic matter.

There are many theories published accounting for the operation of manures in promoting the growth of vegetables, none of which are satisfactory to me. The common opinion is, that the substances employed as manures, contain those principles which constitute the food of plants, and which are absorbed by their roots. One opinion is, that manures act by bringing soils to such a consistence as is favorable to the growth of the roots of vegetables, and to affording them water in proper quantity. Another opinion, that the manures act as stimuli to the roots of vegetables, and thus excite them to a more vigorous action. Some think that manures act as solvents on matters previously contained in the soil, and thus fit them for entering the roots of plants; and others, that they act chemically, by forming combinations which are favorable to vegetation.

The Secretary remarked that the reference of the great question of vegetation by the intelligent Jersey farmer, to this Club or to any other Club, is an act of wisdom—long ago recommended in the ancient maxim of a multitude of counsellors. It is unquestionably true, too, that there is an indispensable necessity for an universal diffusion among men (as Simpson said,) of all knowledge. Teachers are wanted everywhere, especially in agriculture, which has many times fallen off more than any other department of human knowledge. We might speak of its fallen state here in this proud western world, of original soils and growth, seemingly inexhaustible.

Even in the moderate period since I was a young man, we have seen the world admiring the noble works, practical and scientific, of Von Thaer, and but the other day, the chemical lectures of a Leibig, and yet more recently the results of practice, guided by all the resources of science from Mapes, of New-Jersey. These teachers have made deep impressions on the public judgment. And yet our continent wants a thousand more such men. They ought to have pay and honor without stint.

Judge Van Wyck.—Mr. Tuttle of Morristown, N. Jersey, a farmer, has proposed the question which the Club has adopted for discussion to-day. He sent his communication on the subject through Mr. S. Allen, long a respectable and highly useful member of this Club, and who also now resides at Morristown. Mr. Tuttle proposes, the germination and growth of plants, and their fertilizers, the source of the latter and how they act upon and influence the former. He thinks they derive the greatest portion of their nourishment from above, the atmosphere, heat, light, moisture, &c., that these enter and influence the upper parts of the plant first, and descend to the roots, and through this channel the greatest portion of food is received. He admits that plants may, and perhaps do receive nourishment from the soil through the roots, and receive benefit from it. He gives many plausible reasons, and cites some strong facts for his theory, and very well expressed, and which knowledge he has no doubt acquired from close observation and practice as a farmer—the best book perhaps after all for one to spend much time in studying, to make the most successful farmer. It is admitted by most scientific agriculturists, that plants receive food through their foliage, and which influence their growth much; but in what proportion has not perhaps been fairly settled. Mr. Tuttle recommends keeping the surface of the soil covered with a good coat of grass. This certainly cannot be objected to; it protects it from the scorching sun of summer, from the frosts of winter to a certain extent, and drenching rains of all seasons, and furnishes food for animals. Such men as J. Sinclair, H. Davy, and many others, all eminent as scientific and practical farmers, say, the first step of every good farmer should be to throw over his soil a rich, thick carpet of

grass, and keep it there as long as he can. Mr. Tuttle said not a word, as I understood him, about tillage: no doubt if he had, he would recommend as the best, deep ploughing and stirring the earth well, and pulverizing it effectually, so as to put it in the best state for the reception of the seeds. Mr. Pell, in his essay took a more extensive view of the whole subject on the growth of plants and their fertilizers; he gave a minute and scientific history of most of the organic and inorganic manures, their chemical names, the gases they produce, and the various combinations of these according to the principles of chemical affinity.

Mr. Pell admitted that plants receive nourishment from the atmosphere through their foliage and other channels. He said little about tillage; if he had, he would have advocated the best, as he has often done in this Club. The final result of the two papers, then, are not so very different; light existed in both; they were both luminous papers, and if darkness existed any where, it must be in a different quarter. Agriculture is a mighty subject, full of important questions and problems, which need demonstration and solution. The best science and practice, it is to be hoped, in time will elucidate many of these. Mr. Scott cited an appropriate case of a farmer in England, having raised five or six crops of wheat, 30 bushels or more to the acre, in succession, on the same piece of ground, without putting any manure on the ground, tilled and stirred it well. We had a particular account given to this Club not long since, by a member, Mr. Elliot, of the same operation. Mr. Elliot had a friend living in the neighborhood where it occurred, who gave him all the particulars and facts in a letter, and which this Club published at the time. Here, I think, was a case in which the atmosphere had some influence as a fertilizer, probably both on the roots of the plant and that portion of it above the earth, stems, flower, and leaves in every stage of it, until it reached maturity.

Solon Robinson—The object of this Club is to get at truth; therefore we must speak our own sentiments with perfect freedom. Now, as to the theory of resting the soil, put forth by our friend the Jersey farmer, I think that if you let your land lie still, sir, you will have to lie still yourself. No, sir; Tull was a stirrer

of the land, and he was right. Virginia once let her land lie still, and she had to run away from it, for it would no longer sustain her; it would grow nothing, sir. Mr. Pell never lets his land lie still; he ploughs much, and he ploughs deep. Professor Mapes ploughs thirty inches deep, that roots may go deep for their food, and help the leaves draw from the air. Sir, our old plan of letting sod get rich and then ploughing it up is a good plan.

Mr. Scott—The subject of the movement of the sap has been greatly discussed. The sap which has been elaborated in the extremities of branches, cannot have been drawn from the atmosphere. Tull's system of stirring the soil much and deep, has not yet been shaken. Mr. Smith, of —, has raised successive fine crops of wheat on the same land by stirring the land much and often.

The Secretary—A great many years ago, an Englishman came to Connecticut in search of a farm. In one of the old towns he noticed a ruined farm-house, barn, farm in ruins, and the land showing here and there a mullen. He asked about it, and was told it was worn out long ago, was deserted and is good for nothing. He bought the farm at about one-tenth the price of good lands, he repaired all the buildings and fences, and in the spring began with large deep ploughs and strong teams to plough the farm—first one way and then across—and so on during the summer season. He put no manure whatever upon it. In the fall he sowed wheat. His neighbors considered him to be a decided fool. The wheat came up nobly, to the astonishment of the land skimmers, and the crop was about thirty bushels to the acre, or about double the common crop of the skimmers.

The subject of American Forest Trees to be continued at the next regular meeting, on the first day of March.

H. MEIGS, *Secretary*.

Farmer's Club, Tuesday, March 1st, 1863.

REGULAR MEETING.

Present—Messrs. R. L. Pell, Judge Van Wyck, Solon Robinson, Pike and Gore, of New-Jersey, Nash, R. S. Livingston, Lawton, of New-Rochelle, Scott, Dickey, Prof. Enderlin, and twenty others. Solon Robinson in the chair. Henry Meigs, Secretary.

The chairman stated the subject—The Forest Trees of America—and asked Mr. Nash if he had anything to remark on the subject.

Alanson Nash, of New-York, stated :

THE SUGAR MAPLE, OR ACER SACCHARINUM,

Is a tree that grows extensively in most parts of North America. It is a noble, majestic tree, and one of the most useful and ornamental trees in America ; it seeks a cold climate, visited by frosts, and delights to grow on a rich, strong soil ; the height may occasionally reach one hundred feet, and the size six feet in diameter, but it usually is from 40 to 80 feet in the forests, and 3 to 4 feet in diameter, when full grown. In the open fields and grounds it is a very bushy tree, and makes one of the most elegant shade trees, free from worms and insects. It often grows in vallies and along streams of water, but generally the cold lands are most congenial to the growth of this tree. Its great excellence consists in its furnishing a sap from which vast quantities of sugar are made during the months of February, March and April ; an open winter, constantly freezing and thawing, is a forerunner of a good flowing of sap.

A grove of maple trees is almost equal, acre for acre, to the sugar cane, to produce sugar and molasses. We have seen fields of 200 to 300 acres set out with young shoots of the maple tree, and in a few years forming a thrifty growth. In fifteen years, a sapling taken from the woods and transplanted, will afford a delicious shade for a dwelling. We have known this tree to grow 400 years in the forest, but generally it is a tree that rarely reaches the age of 300 years. The maple grows up quickly, and in many parts of the United States the trees have come up as a second

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growth since the country has been cleared and settled, and now form excellent sugar groves, the most beautiful seen in our country.

The young trees yield the sap much more freely and in greater quantity than the old trees, but drawing the sap from young trees stops their growth, and in a few years will kill them. A tree ought to arrive at the age of fifty years before it is used for sugar. We have known full grown trees to produce 500 quarts of sap in one season. From two to eight pounds of sugar a tree, is a good yield for a sugar grove in one season.

The flowing of the sap is influenced by the wind and weather ; a southerly and westerly wind in a clear day will start a full flow of the sap, but a northeast wind of two hours' duration will stop the running of the sap, even when the temperature of the air is lowered but a very few degrees.

The tree often starts up on the most rocky and rough portions of land, but in Kentucky and Ohio, we are told that the maple is found in immense groves on rich and low grounds. The tree is found from the Gulf of Mexico to Labrador and Hudson's Bay, and from the Atlantic to the Pacific Oceans. It dwarfs in a warm climate. Frost seems essential to the growth of this tree.

The fuel of this tree is one of the best known ; but the timber soon decays when exposed to the weather ; hence it is little used for lumber to cover the outside of buildings ; but for timber when used under cover and protected, it is strong and durable. The birds-eye and curled maple timbers are elegant for cabinet work.

Large and bushy trees that stand in the open grounds, insular, and in favorable situations for soil and light, sometimes yield great quantities of sap. It is said that a single tree has been known to furnish thirty gallons of sap in twenty-four consecutive hours ; but this can only happen where the tree enjoys peculiar advantages for growth and location. The sap is a delicious drink ; all animals are fond of it ; it comes away from the tree as clear as crystal, but in twenty-four hours it will change its color, and in 48 hours begins to sour and put on more or less of the sacchar-

ine fermentation. It first grows of a brown color, then it becomes ropy and sour, and makes a mucilage like a clot in vinegar. It makes the best vinegar in the world.

The time for tapping trees to obtain sap is in February, March and April, but generally more sugar is made in the Northern States and Canada in April than in any other month. When the sprigs and limbs of the maple tree in February and March which have been broken by ice in the preceding winter, exhibit signs of the sap dropping from them, the time to tap the tree for making sugar has come. A two inch auger is bored into the tree three inches, at about two to three feet from the ground; then a hollow spout or syphon of sumach is driven into the hole tight so as to prevent the sap leaking. Many sugar makers box the tree with an axe. Into this box a bit is passed to form a hole for a spout. This barbarous method destroys the growth of the tree. Clean pails or tubs of pine ought to be used to catch the sap when it runs. The sap ought to be caught every day and boiled.

There are many improved methods of making the sugar. We have seen maple sugar that would vie with the best loaf and lump sugar. Indeed maple sugar, when boiled clear, and while the sap is fresh from the tree, will usually granulate or chrystalize superior to the sugar produced by the cane. Much depends on the skill and care of the operator in the yield of sugar obtained from a given quantity of sap. We have known a pound and a half of sugar obtained from ten quarts of sap, and at other times it would take twenty quarts to yield a pound.

The sap ought to be boiled down in a kettle set in an arch in the open air, to prevent ashes and other ingredients from falling into it.

The sugar will not granulate when the syrup or molasses is sour or burnt. As the molasses thickens it boils not unlike soap; then the fire must be slacked. The process ought to be conducted slowly. A few coals kept under the kettle will be quite sufficient to boil the sugar dry. A wooden paddle may be used to granulate the sugar, and this is done by constantly stirring the sugar when it chrystalizes.

We have ascertained from the United States census for 1850, that there were produced in the United States in that year, 33,980,459 pounds of maple sugar, besides molasses, of which the several States furnished the following quantities of sugar :

	<i>Pounds.</i>
Maine,.....	97,541
New Hampshire,	1,392,429
Massachusetts,	768,596
Vermont,	5,159,641
Connecticut,	37,781
New-York,.....	10,310,764
New-Jersey,.....	5,886
Pennsylvania,	2,218,641
Maryland,.....	47,740
Virginia,	1,223,905
North Carolina,	27,448
South Carolina,	200
Georgia,.....	50
Alabama,.....	473
Mississippi,.....	110
Louisiana,	260
Arkansas,	8,825
Tennessee,	159,617
Kentucky,	388,525
Ohio,	4,428,648
Michigan,	2,423,897
Indiana,.....	2,921,638
Illinois,.....	246,078
Missouri,	171,642
Iowa,.....	70,684
Wisconsin,	661,969
Minnesota,	2,950
Total,.....	32,759,269

Rhode Island, Texas, Oregon, California, Utah, New Mexico, Delaware and Florida.—These States and Territories are not returned, but there is returned 1,221,194 pounds overplus.

This does not include the amount of maple sugar made by the Indian population east of the Mississippi, which may be set down at 3,000,000 of pounds. For the Indian population west of the Mississippi and Lake Superior, say 2,000,000 of pounds. There was returned to the Census department of Canada in 1849, of maple sugar made in these provinces :

For Upper Canada,.....	4,160,667 pounds.
“ Lower Canada,.....	2,303,168 “

No returns in from Nova Scotia, or New Brunswick, Newfoundland and Labrador.

The above is independent of molasses made from maple sap, which may be set down at 20,000,000 of gallons annually made in North America. The world has seen but few trees of more importance than the maple.

Mr. Nash also read the following on

AMERICAN HEMLOCK (*PINUS CANADENSIS*).

This tree is a valuable one ; its bark supplies more than one-half of the tanneries of leather in the United States. The tree may be cut down in May, June, or July, then the bark peels from the tree with the greatest facility. One wood chopper will strip a tree one hundred feet long in three hours. This bark contains the tanning principle in greater perfection than any other, except the oak alone. The tree often grows one hundred and fifty feet high, and sometimes attains the size of five feet in diameter four feet from the ground. The timber of the aged trees is apt to be shaky, so that when it is sawed into boards they are worthless, for the reason that they split and crack into narrow strips ; nevertheless, when sawed one-half inch thick, they make good lathing for plastering inside of houses and dwellings. The younger trees afford excellent timber and shingles, and make a very durable and substantial board for covering buildings, and to finish off plain joiner work in houses. Perhaps one-half of the boards used in the New-England States for out-buildings, as well as for the construction of dwellings, are procured by sawing up logs from the young and thrifty hemlock. The tree attains to the age of one thousand

years. It is a vigorous and healthy tree, seeking the north and west sides of high rocks, hills, and mountains, while the east side of the hills and mountains will often be covered with a growth of the sugar maple, through all the northern parts of the Green Mountains. The Catskill range, the mountains west of Lake Champlain, and many portions of the Alleghany mountains, are covered on their northerly and westerly sides with vast forests of the hemlock tree. It also grows well in swamps, especially on high grounds. The high lands of the Catskill range of mountains yield immense quantities of hemlock timber and bark. More tanneries are carried on through the counties of Greene, Sullivan, Delaware, and Schoharie, than any other part of the United States. Through the New-England States the hemlock tree is fast disappearing and will be soon gone.* The bark is so thick and heavy that it has been found more economical to carry the hides to the region where the tree grows than to transport the bark from the mountains to the lower country, into the towns and villages. The hemlock bough is covered with a short and narrow leaf, which is an evergreen, thickly set and without number. These boughs, when distilled, form a powerful essence and oil, which, when applied to bruises and rheumatic swellings, afford an active remedy. In cases of typhus and spotted fever, and a low type of scarletina, sometimes called a cold plague, these boughs boiled in water and taken hot, and laid around the patient and covered with blankets, produce a happy stimulant for the perspiratory organs. The method of using the bark to the best advantage for tanning is said to be, first to dry it one season in the atmosphere, with the inner side facing downwards to protect it from the weather; the bark is then transported to the tan house and dressed by shaving off the weather-beaten outside parts of it, then it is put into a crushing mill, then ground almost as fine as sawdust. Many improvements have been made from time to time in the art of tanning with hemlock and other bark. We have heard of hides being turned into leather in six hours operation, by passing the skins on a wheel into the warm tan liquor and throwing them out to the air.

The hemlock tree, like many others, has been wasted. It affords a cool, healthy, stimulating, and fragrant shade tree, when grown

around dwellings, and properly pruned. It is one of the most useful and elegant trees in the American forest.

Timber sawed out from this tree and kept housed will last hundreds of years perfectly sound.

Mr. Nash—We copy the following from an address lately delivered by the Hon. Zadock Pratt, before the Mechanics' Institute in New-York, on the subject of tanning, and the hemlock and oak barks :

I approach the practical business of tanning in our own day and generation. The first thing to be considered by a practical tanner, if he wishes to carry on the business with success, must be a *good location*. Where hemlock or oak abounds, there the elementary principle of tanning exists. This location ought to be, of course, upon a navigable stream or railroad; for it is much easier to carry the hide to the bark than the bark to the hide. In America, the great question of location is settled by the shortest and cheapest route to what our tanners all over the country understand by the word "Swamp." This district lies in the southeastern part of New-York city, in the heart of business, pretty nearly in a straight line down Spruce and Ferry-streets, towards Brooklyn. It used to be a neglected part of the city, and it was literally a swamp. But the tanners began to buy and build there, and for a considerable time the tanning business was carried on in the Swamp—I mean the business of tanning the hides—whereas, now, it constitutes only the leather market, with the exception of the morocco tanning, which is still carried on to a considerable extent.

The "Swamp" is the largest leather market on the earth. It is a radiating point for the distribution of hides and leather for this country and for other countries, in about the same way that Wall-street is the market and centre for financial operations. I shall say little about oak tanning, because there is less of that kind of tanning done, and I have been more familiar with the hemlock.

The successful tanner finds himself obliged in our times to turn his thoughts to scientific agriculture, for the purposes of economy, if for no other reason; and he must locate himself where the trees

from which he peels his bark can be conveniently carried to a saw mill, in the neighborhood of a profitable lumber market; at the same time he must endeavor to choose land which, when thus cleared, will be worth more than it cost him in the purchase. The bark which he uses for tanning, and the logs which he saws into lumber, must each of them pay for the trouble of doing it, and clear the land, and make it ready for profitable agriculture. Thus the tanner, if he is wise in location, and lives in a good neighborhood, or will do what I was obliged to do, bring good working men to live with him, makes himself useful by creating a market, clearing the land, growing up villages, and establishing whole communities; for every American tanner, at least, ought to have foresight enough to see that all his labor produces some valuable results, not only to the community where he lives, but to the country which has put him under such great obligations, by giving him the inheritance which has descended from the blood of the Fathers of the Republic.

Formerly it was thought best to locate upon a good water power to carry the machinery, but experience has proved that you may carry a steam engine into any location, and by the burning of tan, or ground bark, after it has been used, which is called by the tanners "leached," or "spent tan," you may keep steam power without the use of firewood, and at a nominal expense.

Let me now conduct you for a moment into a wilderness of hemlock. The trees are leveled, the bark peeled off, a building is erected, and a modern system of tanning is set up. But do not forget that a modern tanning establishment is not one where our fathers made soles for your ancestors.

The fact that I have chosen tanning as the subject of my address can be accounted for in a very simple way; I have devoted my life to this business, and if I do not understand tanning I shall never understand anything. I have been acquainted with tanning, in all its forms, during the last fifty years; more than half a century has gone by since I worked in my father's tannery; I have witnessed personally every improvement that has been made in my day, and within my memory, than during the whole time

that had elapsed since Simon the tanner, in whose house Peter, the great Apostle, was lodged.

If therefore, in speaking about tanning, I should, by relating my own experience, seem to be egotistical, I trust that my audience will forgive me, because I have lived so long that I have more confidence in what I have experienced than in what I have read. I wish to say nothing in the spirit of boasting, but rather in the spirit of gratitude to that kind Providence which has enabled me to surmount many difficulties; and in acquiring a knowledge of my art, I trust that he has put it into my heart to do some little good to those that were around me.

I learned my trade with my venerated and beloved father. His tannery stood near a spring, with two pools, two limes, two baits, and eight tan vats, about as good as the country produced. In those days we had no latches, pumps, or conductors in the vats. By a long pole and skimmer we skimmed out the tan. Occasionally our spring would fail, then we had to bring the water "under the yoke," so you will see that I have known what it is to "bear the yoke" in my youth. I am willing to do it still, to develop the resources of such a great and glorious country as this. We ground our bark then by horse power, with the rotating stone with notched edges. "Old Pomp," the family horse, helped us to grind out a cord of bark a day. In order to draw out the liquor from the vats, and add stronger, I invented a three-cornered pump, placed in an eye-board in an angle of the vat, which was quite an improvement, for we had built a little latch above ground, where the only heat we could rely on was the congenial sun.

This is the first improvement I remember in connection with tanning. Soon after we made new vats, with conductors under them running into a junk, and thus by the aid of three men at the pump, the liquor was raised to the latch. But soon after the present mode of ball, or press pumps, came into use, by which one man could do the work of three, and then I began to feel that we were half rich.

This was about the time the last war with England closed. Toby, of Hudson, had invented a bark mill, which with some little improvements has been used ever since.

Tanning now began to grow into a system, with fulling mills to soften the hides, and conductors to draw off the liquor from the vats, and a press, or ball pump, with leches and heaters.

To illustrate more completely what I mean, I may be excused for referring to my system, as practiced at the Prattsville tannery; for this will show the degree of scientific skill, mechanical ingenuity, and moral and commercial influence that may be connected with the manufacture of the single article of sole leather.

In 1824 I visited the district (then a wilderness) where Prattsville now stands. Nobody had supposed that there was a water power there, but a practical experiment on the spot, with a millwright, proved satisfactory. My experience in that valley has shown a lesson that I would gladly inculcate upon all my fellow-countrymen, particularly on young men, that to will and to do are very nearly the same thing. I do not wish to trouble my audience with a minute relation of my experience in the art of tanning, nor of the system that I adopted, and I shall therefore leave out of this address what now might prove tedious for you to hear, but I may publish it hereafter.

I now ask your attention for a little while, as I present some further views on the general subject of tanning, that have been incidentally brought to my notice.

The first hemlock leather that was taken to England from the United States, excited the astonishment of a chemist, and he said that it was not tanned, but only colored. He declared that he would take out the color, and bring it back to hide. So he went to work, but after trying to his full satisfaction, he found out that Brother Jonathan had already got ahead of him, and tanned what the English chemist could not untan.

A cord of hemlock bark weighs about 2,200 pounds. When leched or boiled down, it will make three or four hundred pounds of dry, hard tan, that can be reduced to the immediate practical use of the art of tanning. Why this number of pounds does not all enter into the hide, I am unable to explain; but it is well known that a cord of bark does not make more than sixty or eighty pounds. The cause of this great loss has not been deter-

mined. This is a subject which ought to be investigated; chemists should turn their attention this way, because there is room enough here to add a great deal to the wealth of the world.

There is a great difference in the strength of hemlock bark. That which grows in the region of the Catskill mountains is the best that I have ever found. The oak bark of Delaware and Maryland is considered the best of that kind. The hemlock of Maine and New-Hampshire will not make as much leather, nor as heavy leather, nor will the bark of Michigan or Ohio. Oak bark is the best for tanning upper leather and thin sole leather, while hemlock is the best, or quite as good for thick sole leather.

The Buenos Ayres hides are thought to be the best for sole leather, yet they will not make as many pounds as the Oronoco hide. City-slaughtered hides are tanned principally in oak, and they are used chiefly in the manufacture of harnesses, belt straps, fine boots and ladies' shoes.

It may be a matter of curiosity and instruction to know how long a tannery will last. This depends much upon whether steam is allowed to come in and keep the beams and timbers in a moist state. The larger the timber is, the sooner it rots. A tannery of a large and improved class will last from twenty to thirty years, by having the beams renewed two or three times; and this is long enough, generally, to consume all the bark that from one single neighborhood can be conveniently drawn to the tannery. When the tan-vats are sunk in clay, they are never known to wear out, when they are filled in with common earth, or even tan, if the air can be excluded by having them kept wet on both sides, they will last almost any period. The old-fashioned heater kind of leches will last about three years, and the timber around them twice that time.

There are three or four modes of heating, that have hitherto been adopted. The late mode, by the pan, I have found to be the cheapest and safest. Formerly, wood was used, but now, tan wet from the leches, is in requisition; it is good, and cheaper, and will answer to make steam and drive all necessary machinery.

I have before me a statistical account of tanneries in the United States, which has been carefully compiled from the returns of the last census, a brief summary of which I will here give. In the year, 1850, there were 6,263 tanneries in the United States, of which there were over 1,000 in the State of Pennsylvania, while there were only two in the District of Columbia, one in N. Mexico, four in Florida, eight in Wisconsin, ten in Rhode Island, fourteen in Iowa, fifteen in Louisiana, and sixteen in Delaware. New-York comes nearest to Pennsylvania in numbers, for our State has 942, while Ohio, which has 706, stands next. The capital invested in all the United States' tanneries amounts to \$19,000,000, of which more than one quarter is in New-York. 6,000,000 of hides, and more than 2,500,000 of skins, besides 6,000,000 of sheep and other small skins, are tanned a year. Almost one-third of this business is done by the State of New-York. The value of the raw material per annum is \$20,000,000, of which New-York consumes one-third. 21,000 hands are employed in the business of tanning, while several hundred thousand are incidentally employed in cutting timber, drawing bark, and transporting hides to and from the tanneries to the markets. Upwards of six millions of dollars are annually paid for labor to the workmen in the United States' tanneries, and over twelve millions of sides of leather are now tanned in the United States every year, whose value amounts to about \$33,000.

I have another table, showing the value or price of sole leather every year from 1827, when it brought $17\frac{1}{2}$ cents per pound. In 1841, the average price of it throughout the year, in the New-York market, was 13 cents per pound. During this period of 24 years, the highest price it has averaged was in the year 1831, when it brought $19\frac{1}{2}$ cents per pound. It reached its lowest price in 1846, when the average for twelve months was only $11\frac{1}{2}$ cents.

TABLE,

Showing the average value or price per pound obtained for hemlock sole-leather, during the following years:

Cents per lb.	Cents per lb.	Cents per lb.
1827,.....17½	1836,.....17¼	1845,.....12¼
1828,.....18½	1837,.....16	1846,.....11¼
1829,.....18½	1838,.....17	1847,.....14 1-10
1830,.....18½	1839,.....18½	1848,.....12¼
1831,.....19½	1840,.....16¼	1849,.....15
1832,.....17¼	1841,.....16¾	1850,.....13¼
1833,.....15¾	1842,.....14 1-10	1851,.....13
1834,.....13¾	1843,.....13 2-3	1852,.....14½
1835,.....14¾	1844,.....13½	

I have another containing the number of sides of sole-leather inspected in New-York city, from 1827 to 1851. In 1827 there were 265,552. This amount gradually increased till 1850, when it rose to 2,200,000.

TABLE.

Sole-leather inspected in New-York city, in the following years:

No. of sides.	No. of sides.
1827,..... 265,552	1840,..... 638,112
1828,..... 284,978	1841,..... 687,101
1829,..... 264,878	1842,..... 886,868
1830,..... 326,298	1843,..... 867,210
1832,..... 440,000	1844,..... 1,048,770
1833,..... 883,604	1846,..... 1,874,256
1834,..... 828,175	1847,..... 1,168,332
1835,..... 784,165	1848,..... 1,325,146
1836,..... 925,114	1849,..... 1,750,231
1837,..... 890,962	1850,..... 2,100,000
1838,..... 749,556	1851,..... 2,184,543
1839,..... 772,255	1852,..... 2,000,375

For the last four years the value of raw hides and skins, and manufactured leather, imported into the United States, was as follows:

TABLE.

	Raw hides and skins, imported.	Manufactures of leather, imported.
1848,.....	\$4,362,069	\$208,993
1849,.....	3,507,300	210,143
1850,.....	4,799,031	362,409
1851,.....	5,964,409	411,797

Another table, I have made out, shows the number of hides, imported into and exported from the port of New-York, during each year, from 1827 to 1852, and the number of hides consumed or made into leather :

	Hides imported.	Exported.	Consumed.
1827,	251,975	41,545	218,430
1828,	268,774	48,369	220,375
1829,	308,987	52,023	256,964
1830,	475,640	26,305	446,335
1831,	772,299	8,017	764,282
1832,	975,094	169,493	662,705
1833,	892,198	58,282	833,916
1834,	700,052	169,856	530,196
1835,	863,331	21,903	836,378
1836,	942,890	109,273	828,617
1837,	623,925	99,356	524,269
1838,	543,300	25,695	517,605
1839,	561,105	24,186	536,919
1840,	520,251	31,825	488,026
1841,	633,269	4,245	626,024
1842,	635,631	31,286	604,345
1843,	635,431	53,633	599,798
1844,	857,790	45,915	809,174
1845,	777,640	53,633	724,007
1846,	636,583	55,924	580,659
1847,	990,305	15,236	975,069
1848,	972,087	4,025	967,962
1849,	1,227,386	none.	-----
1850,	1,461,394	none.	1,187,510
1851,	1,366,239	2,700	1,426,993
1852,	1,433,576	none.	1,429,871

The chairman said, that great improvements had been made in the manufacturing of maple sugar. He had seen at recent Fairs, specimens of it, which would lose nothing, when compared with Stuart's best refined loaf sugar.

Mr. Pike doubted whether the sugar maple yielded sap enough to be worth having at twenty-five years of age. He had them of that age, and they do not give sap worth the trouble of tapping the trees.

Mr. Nash.—The tree requires (for much sap) a cool, moist, rich soil; when transplanted to a dry one, it degenerates. It loves frosty ground, grows well, and yields abundantly its sap. When taken to the southward it degenerates. It thrives northerly to Labrador and to Hudson's Bay. I never saw one growing in a swamp. It loves a clear mountainous country. When broken by ice or cut away by the axe, leave but one chief limb on the body, and it thrives, I think, by an electrical action.

Chairman.—It does best in Ohio and Kentucky, upon the flatlands of those States, where it grows in vast groves and forests.

Judge Van Wyck.—We have had a very important communication made to us to-day, by Counsellor Nash, on the produce of the acer saccharinum, or sugar maple of the United States. The statistics here given are taken from the latest and best sources at Washington, show clearly, the tree, for its prosperous growth requires a rich soil, and pretty high northern latitude. From these it appears that the quantity diminishes much after leaving Virginia and runs down to almost nothing on the banks of Mississippi, and the southern section of it. In the western and north-western States it increases, and in some of them largely. Vermont, for her size and population, gives a large amount. New-York yields the greatest to—10,000,000 lbs.;—this, perhaps, is owing in some degree to her size, and the numbers engaged in the business. Ohio from four to five millions. All the northwestern states will increase in quantity as their population fills up. As to the inducements of our people to preserve and increase the numbers of this valuable tree, they are many and strong. The sugar is more healthy, palatable and cleaner, than that made

from the cane. The cane sugar of the United States is cleaner than the sugar of the West India islands and some other quarters. The market price is always a paying one—from 12 to 22 cents per pound, according to quality. Much depends on the making, boiling, purifying and refining; if these are properly attended to, it can be made almost as white and beautiful as the best double refined, made from the cane, and much more palatable and healthy. There is a peculiar flavor imparted to the maple sugar if properly manufactured, which no other plant producing the juice has. The produce of sap from different trees, is very different, some producing much more than others, according to location, size, thrift and manner of tapping. I have known trees to produce 6 or seven pails full in a day or 24 hours, others much less. A gentleman, a sugar manufacturer, in western New-York, writes: "Having introduced twenty tubes into a sugar maple, I drew from it in the same day 23 gallons, 3 quarts of sap, which gave 7½ lbs. of sugar; 33 pounds have been made this season from the same tree, which supposes 100 gallons of sap." It would seem from this, that only a little more than three gallons for a pound, though four are commonly allowed. The sugar maple thrives best when insulated, not near any other tree; high or low ground, if rich, and near moisture are best. Great havoc has been committed of late on the sugar, and all other kinds of this valuable tree; this for fuel, charcoal and potash, for all of which it is very fine; it contains a great deal of the alkaline principle, and of course produces pearlash in quantity and quality, greater and better than almost any other tree. The tree should be preserved with great care for timber, sugar and ornament, being as beautiful as useful.

The oak is a large family of our forest trees; the white oak the first in importance. It was remarked by Theophrastus more than 2,000 years ago, that the oaks, and especially the white, attained the greatest perfection on a high, rough, gravelly, mountainous region, here it grows slower, is more subject to winds and storms, becomes harder, more compact, lasting, and every way more useful as a timber tree. The white oak of the granite mountains of New Hampshire and Massachusetts produces timber among the best, and this for any building purpose, vessels or houses, and

especially the first. The frigate Constitution—‘old Iron sides’ as the sailors nick-named her—which acquired so much glory for herself and nation in the last British war, was built of the granite oak named. This was owing, no doubt, principally to the skill, spirit and bravery of her commanders and their crews, but not a little to her building, and the materials of which she was built, as a few facts will show. She was built by George and William Cleghorn, brothers, of New Bedford in the Bay State, among the best ship builders of that day, of which they had given many proofs. These gentlemen not only knew good, well seasoned timber, but what is of equal importance, they knew how to put it together so as to stand the hardest knocks. This vessel was built of timber from the granite hills named. There is much silex or sand in it; this combines with the potash or alkali, and crystalizes. When struck with force it yields and crumbles into fine pieces or chips. These substances fall into the impression or cut made by any hard external body, and partially fill it up. It dulls, breaks and spoils axes very soon. A cannon ball may enter it and perhaps pass through it, but it makes a small hole, easily fills up; it makes no splinters or slivers of any kind. This is one reason why old ‘Ironsides’ withstood the batteries of the tempests and the enemy’s balls as well as she did. The black oak, I believe, stands next to the white in importance. It is a large, majestic tree; grows fast; is more porous; splits easier than the white; but if cut at the proper season, and well prepared, makes good timber. This oak possesses more of the tanning principle; all of them possess this in a greater or less degree. It also possesses the property of making the color yellow, strong and bright; equal, and perhaps superior to any other material. Dr. Bancroft, a good chemist and botanist, discovered this quality in the tree during the Revolutionary war. He resided in Boston, and when he went to England he made it known, and it was used for that purpose in Europe to a great extent, and is now. Large quantities were exported from here on that account. The tree is called black from the dark color of its external bark. I know the tree as well as I know the apple tree; its scientific name is *quercus nigra tinctoria*.

There is a tree called the yellow oak, a good timber tree ; but whether the color yellow can be made from it, I cannot tell, but from its scientific name, *quercus prinus acuminata*, I should think not. The resinous tree constitutes a very large family of our forest trees. There is the pine, cedar, fir, hemlock, larch, cypress, &c. These trees, some of them, will grow and flourish in any latitude, from the polar regions to the equator. They are mostly evergreens, some of them very tall and majestic ; beautiful too for their stems or bodies, limbs and foliage, and all yield more or less resin or turpentine. We have every kind of them in our country, in numbers, and some kinds in every section. All are first rate for timber in different ways. The pine, cedar, larch, hemlock and cypress rank first, but from the destruction committed by our lumber merchants and hewers of wood, they will also become scarce and dear with many others of our forests, and not a very long time either before this happens. To show how they nurse and cultivate their forests in Europe, and especially in Great Britain, the late duke of Athol, a Scotch nobleman, planted on his estates in the mountainous parts of Scotland, in about 50 years, nearly two millions of larch trees, and on land that was good for little else, and did not lose from these one in a thousand, all prospering and doing well, except what has been cut for timber. Other gentlemen in England and Scotland followed the example, and transplanted a great many. In England they did not do so well ; it was supposed to be too far south, and the ground not sufficiently high, rough and mountainous. The larch is found to be the best timber for almost every purpose in husbandry or mechanics. Boats built of larch in England have been found sound, when the ribs of another made of oak and built about the same time, were decayed, and this in about forty years.

Amos Gore, of New-Jersey, presented some seedling potatoes raised by him from the seed now the third year. They are of good size, moderate oblong, dark skin. The club tasted them boiled, and thought them good. Mr. Gore has about fifty bushels to sell.

Something was said about the improvement of the blackberry by cultivation.

Mr. Lawton had looked into this, and found nowhere any account of such an improvement. The strawberry is greatly altered and ameliorated, but blackberry never, as far as I have learned.

Judge Van Wyck remarked that an improved crop is obtained by those who take the pains to clean the bushes of grass and other growth, and keep the soil about them in order.

In answer to a question of supply of the blackberry bushes—

Mr. Lawton said that he could now spare about two hundred roots for fifty cents each. At the coming crop I will present a bush, with all its fruit on it, to this club, when the members will be convinced by view and taste of its extraordinary qualities. We now call it the New Rochelle blackberry.

Members spoke of the various dew and blackberries, but no one recognized the round and large one in question. The chairman had seen the berries of the running blackberry, he believed, half an inch in diameter.

The Secretary offered the following resolution :

Resolved, That the American Institute be requested to call the attention of the Government of the United States, and of each of the States, to the preservation and planting live oak, white oak, locust, pine and black walnut trees, and white ash, and that suitable rewards be offered by the governments to the persons successful in such preservation or planting.

Within the last two centuries we have made vast destruction of some of these most useful trees, especially of the white pine, And we forget that as this has been the work of our people, now twenty-five millions in number, and that in the next twenty-five years that population will double, and before a tree now planted will be fit for ship or house building, as much timber will be wanted as in the last period of two hundred years.

Wise and paternal governments will take sure means to provide for their woods and forests. England of old had forest laws for that purpose. The forests were created by the king by commis-

sion issued from the Court of Chancery; and a forest became a matter of record. Its laws and offices were established. Forests were granted to subjects. In 1224 Henry III. of England granted the *carta de foresta* (forest chart.) The earliest forest laws were by Canute.

General Chandler—For the last twenty five years maple sugar in various degrees of refinement has been exhibited at our fairs, some of it very highly refined. In its most unrefined state it has a flavor which tastes of the tree, is peculiarly agreeable; but in proportion as it is refined, it more and more resembles that of the sugar cane.

Chairman—To retard the souring of fresh sap they use a very small quantity of sulphate of lime. The acidity begins almost immediately after the sap is drawn from the tree.

William Lawton of New Rochelle, presented a stalk with its branches, of a remarkable blackberry. He understands and believes that the original bush was discovered by some boys, growing near a rock in New Rochelle, about five years ago; it was transplanted to his garden by a neighbor from whom I obtained a dozen plants in 1848; they gave fruit that season. The crop is now very abundant. Some stalks grow fifteen to twenty feet high. The berries are round, as large as Hovey's seedling strawberries, say three to four inches in circumference, and very delicious; seeds deeply seated and quite small compared with the fruit. I counted eight hundred berries from one stalk. They are readily propagated, but the roots must not be allowed to become dry; if they do get so, they are very apt to perish. I find it best to transplant them in spring. They do not do so well if moved in the fall. The berries are ripe about the last of July, and last until the second week in September usually. They seem to love a heavy damp soil and the shade of trees. I do not believe that cultivation will improve them.

The Secretary has examined a beautiful flower, one of our native vines, and prepared the following account of it, viz:

WISTARIA,

According to Lindley, in the vegetable kingdom belongs to the *Fabaceæ* or *Bean Bearers*. The botanist Nuttall called this vine *Wistaria*, in honor of Caspar Wistar, professor of anatomy in the University of Pennsylvania. They are *natives* of China and North America. They flourish in Great Britain. They are deciduous (leaves fall off) twining plants, and form, when in flower, the handsomest flower of the garden.

Wistaria Frutescens, or fruit bearing *Wistaria*: an elegant climbing plant. Flowers odoriferous; opening from July to September. Is a native of Virginia, the Carolinas and Illinois. The standard has a greenish yellow spot at its base.

Wistaria Chinensis or *Chinese Wistaria*, is a native of China. It was carried to England in 1816, where it flowers in May and June, and then again in August. From the first one imported, a cutting was placed in the garden of the horticultural society of Chiswick, where it is trained on a wall eleven feet high, and its branches extend on each side to the distance of one hundred feet, nearly. It is very hardy and will soon become a universal favorite. It was originally *Glycene Chinensis*—a name which it still bears in some places.

Wistaria Floribunda: an elegant plant; native of Japan, not yet introduced here, or in Europe. It is the *Dolichos Polystachos* of Thunberg. *Wistaria* is easy to cultivate by layers, or by cuttings. Flourishes most in light soils, and is best when trained on south walls.

Noble specimens of *Wistaria* have been cultivated by John J. Palmer, president of the Merchants' bank, and by Augustin Averill. The vine of the latter is, we believe, of an hundred feet in height—the vine being for the most part of a size, as uniform as a rope. The large bunches of lilac-colored flowers appear to cover it by thousands.

The Secretary read the following translation made by him from *Revue Scientifique*, Paris, on chemical classification of organic substances, by professor Gerhardt, of Montpellier.

"The most beautiful results which organic chemistry has attained within the few years past, consist, without contradiction, in the artificial reproduction of substances of an animal or vegetable origin. At this day, the chemist no longer extracts his Formic (ant) acid from the little insect whose name it bears, and who secrete it—but with far greater advantage from sugar, starch or gum. They also extract oxalic acid, employed in the fabrication of painted cloths ; for sugar, starch or gum furnish it promptly and economically. From blood, horns or flesh, the cyanures are made and urad obtained, and the latter from the excrement of birds, reptiles and insects.

"With this uric acid is prepared the crystallisable principle contained in the allantoic liquor of the fœtus of the cow, the rennet. With wax it forms the acid contained in mutton suet, from the fat of a man, and from butter. With wax, whale fat, all thick oils, the succinic (amber) acid is produced, and much finer, and in larger quantities, than that from resin. We make starch sugar ; the essence of bitter almonds gives us benzoin. We make the acid of valerian and of butter with the products of the fermentation of sugar. These beautiful discoveries, and many more with which organic chemistry is enriched—being artificial reproductions of substances—would, unless we knew the processes, tempt us to believe that the chemist had supernatural power or magic power ; to behold, in fact, the creation of living nature, born, as it were, in the crucibles and vessels of the chemist. The transmutation of the base metals into gold seems less difficult.

"The processes are either analytic or by agents of combustion, synthetic. The first are far more familiar in chemistry than the latter. A crowd of animal and vegetable substances have been produced by making the reacting oxygenants, such as nitric acid, hydrate of potash, aqueous chlore, chromic acid, act upon other substances more carbonized or more hydrogenated. By the aid of these re-actives we have (as it were) burned, or rather simplified, the most complex molecules presented by the organic kingdom. In this view the chemist is acting directly against the course of vegetation. The carbonic acid and the water are reduced, the oxygen taken away, the carbon and hydrogen main-

tained in combination with oxygen alone, or with the ammoniacal elements, according as the vegetable economy requires to produce essential oils, fatty, woody, sugary, or those albuminous substances destined for the support of the animal kingdom.

Amos Gore, of New-Jersey, exhibited samples of very large, heavy, white flint corn, grown by him in New-Jersey. I never tread on my corn ; I use a scratcher or cultivator having but few teeth ; I plough first away from my corn, then to it ; I use a sub-soil plough pretty early in the season in the middle of my rows, a foot deep ; the roots are not then in the way ; I seldom use the hoe much ; there is no occasion for it in my method of cultivating corn ; I leave three stalks in each hill, and four feet every way between hills.

The Club called Mr. Gore's seedling potato the "Gore Potato." The subject of forest trees and plants for next meeting.

Adjourned to Tuesday next, at noon.

H. MEIGS ,Secretary.

PREMIUMS

Awarded at the Cattle Show of the American Institute, October, 1852.

THOROUGH-BRED HORSES.

Judges—Robert R. Morris, James Bathgate, John De Graw.

C. T. Howell, Woodside, L. I., for the best stallion, "Clarion," silver cup or \$25. Daniel Abbott, Brooklyn, L. I., for the second best stallion, silver cup or \$20. William Webber, New-York, for the third best stallion, "Fiddler," silver cup or \$15. H. M. Morris, New-York city, for the best three years old colt, silver cup or \$10. J. B. Monnot, New-York, for the best two years old colt, silver cup or \$8.

HORSES FOR ALL WORK.

Judges—A. O. Houghton, A. B. Raymond, Robert R. Morris, A. Hatfield.

Joseph H. Godwin, New-York, for the best stallion, "Cassius M. Clay," silver cup or \$25. James Bigart, Pawlet Vt., for the second best stallion, silver cup or \$20. S. C. Roë, Chester, Orange county, N. Y., for the third best stallion, silver cup or \$15. Jackson Nichols, Flushing, L. I., for the best mare and colt, silver cup or \$20. Henry Booth, Morrisania, N. Y., for the second best mare and colt, silver cup or \$8. William M. Rysdyk, Chester, Orange county, N. Y., for the best three years old colt, silver cup or \$10. Timothy Jackson, Jamaica, L. I., for the second best three years old colt, silver medal. Jackson Nichols, Flushing, L. I., for the best two years old colt, silver cup or \$8. Smith Freeman, Rahway, N. J., for the second best two years old colt, silver medal.

MATCHED AND FARM HORSES.

Judges—Thomas Williams, Jr., James W. Wilson, Brainard Montague.

G. C. Hathorn, Jr., N. Y., for the best pair of matched horses, silver cup or \$25. Charles H. Wheeler, N. Y., for the second best pair of matched horses, silver cup or \$15. A. J. Heard, Orange county, N. Y., for the third best pair of matched horses, silver cup or \$10. Jackson Nichols, Flushing, L. I., for the best pair of farm horses, silver cup or \$20. Todd & Robertson, Mott Haven, N. Y., for the second best pair of farm horses, silver cup or \$15.

JACKS.

Judges—Robert Magaw, William Covert.

A. B. Estes, N. Y., for the best Jack, silver cup or \$10. A. B. Estes, N. Y., for the second best Jack, silver medal.

NATIVE STOCK.

Judges—Thompson C. Munn, R. D. Baldwin, Jacob D. Van Winkle, Daniel Quinby.

Robert R. Morris, Throg's Neck, Westchester county, N. Y., for the best cow, silver cup or \$20. James Twaites, Westchester, N. Y., for the second best cow, silver cup or \$15. D. A. Shuart, Windsor, Orange county, N. Y., for the third best cow, silver cup or \$10. James Bathgate, Fordham, N. Y., for the best two years old heifer, silver cup or \$15. James Patten, Newburg, N. Y., for the best bull calf, silver medal.

GRADE STOCK.

Judges—Isaac Skinner, John Wait, Samuel McCord.

Francis Morris, Throg's Neck, N. Y., for the best bull, silver cup or \$25. Jonathan Thorne, New-York, for the best one year old bull, silver cup or \$10. Robert R. Morris, Throg's Neck, Westchester county, N. Y., for the second best one year old bull, silver medal. William L. Cowles, Farmington, Conn., for the third best one year old bull, Trans. Am. Institute. D. A. Shuart, New-Windsor, Orange county, N. Y., for the best bull calf, silver

cup or \$10. Edward Wait, Montgomery, Orange county, N. Y., for the second best bull calf, silver medal. George McDowell, Newburgh, Orange county, N. Y., for the third best bull calf, Trans. Am. Institute. John A. Smith, Montgomery, Orange county, N. Y., for the best two years old heifer, silver cup or \$15. Robert R. Morris, Throg's Neck, Westchester county, N. Y., for the second best two years old heifer, silver cup or \$10. William H. Paine, Bloomingdale, N. Y., for the third best two years old heifer, Trans. Am. Institute. Elnathan Gazley, Clinton, Dutchess county, N. Y., for the best one year old heifer, silver cup or \$10. Sam'l Love, 53d street, New-York, for the second best one year old heifer, silver medal. William H. Bartlett, Amenia, Dutchess county, N. Y., for the best heifer calf, silver cup or \$10. James Bathgate, Fordham, N. Y., for the second best heifer calf, silver medal. Robert R. Morris, Throg's Neck, Westchester county, N. Y., for the third best heifer calf, Trans. Am. Institute.

SHORT HORNS.

Judges—J. W. Sherwood, Daniel Dean, Edward H. Smith.

Samuel T. Taber, Chester Ridge, Dutchess county, N. Y., for the best bull, "Backwoodsman," silver cup or \$25. James Lenox, Fifth-avenue, New-York, for the second best bull, "General Taylor," silver cup or \$15. Jeremiah Van Drekle, Tenth-street, New-York, for the third best bull, silver cup or \$10. J. C. Jackson, Astoria, L. I., for the best two years old bull, "Astoria," silver cup or \$15. Bathgate Brothers, Morrisania, N. Y., for the best two years old bull, silver cup or \$10. John P. Doty, for the best yearling bull, "Valiant," silver cup or \$10. J. C. Jackson, Astoria, L. I., for the best bull calf, silver cup or \$10. W. J. Beck, Morrisania, N. Y., for the second best bull calf, silver medal. Dudley G. Culver, Dutchess county, N. Y., for the third best bull calf, Trans. Am. Institute. James Bathgate, Fordham, N. Y., for the best cow, "Emma," silver cup or \$20. Francis Morris, Throg's Neck, N. Y., for the second best cow, silver cup or \$15. Robert R. Morris, Throg's Neck, N. Y., for the third best cow, "Fanny," silver cup or \$10. J. C. Jackson, Astoria, N. Y., for the best two years old heifer, silver cup or \$15. Daniel P. Haight, Washington, Dutchess county, N. Y., for the second best two years old

heifer, silver cup or \$10. Samuel T. Taber, Chestnut Ridge, Dutchess county, N. Y., for the third best two years old heifer, Trans. Am. Institute.

DEVONS.

Judges—W. H. Sotham, Lorillard Spencer, Horace Bailey.

L. Hurlbut, Winchester, Conn., for the bull "Prince Albert." This bull having received the highest premium at the Exhibition of 1851, cannot, under the rules, receive a premium at the present Exhibition, said animal having no superior on the ground—diploma. J. N. Blakeslee, Watertown, Conn., for the best bull, silver cup or \$25. William L. Cowles, Farmington, Conn., for the second best bull, silver cup or \$15. W. P. & C. S. Wainwright, Rhinebeck, Dutchess county, N. Y., for the best two years old bull, "May Boy," silver cup or \$15. Chester N. Case, Harwinton, Conn., for the second best two years old bull, silver cup or \$10. J. N. Blakeslee, Watertown, Conn., for the third best two years old bull, Trans. Am. Institute. W. P. and C. S. Wainwright, Rhinebeck, Dutchess county, N. Y., for the best yearling bull, silver cup or \$10. W. L. Cowles, Farmington, Conn., for the second best yearling bull, silver medal. W. P. and C. S. Wainwright, Rhinebeck, Dutchess county, N. Y., for the best bull calf, silver cup or \$10. L. Hurlbut, Winchester, Conn., for the second best bull calf, silver medal. J. N. Blakeslee, Watertown, Conn., for the third best bull calf, Trans. Am. Institute. L. Hurlbut, Winchester, Conn., for the best cow, "Beauty Third," silver cup or \$20. W. P. and C. S. Wainwright, Rhinebeck, Dutchess county, N. Y., for the second best cow, "Elena," silver cup or \$15. L. Hurlbut, Winchester, Conn., for the third best cow, "Elfy," silver cup or \$10. W. L. Cowles, Farmington, Conn., for the best two years old heifer, "Ellen," silver cup or \$15. W. P. and C. S. Wainwright, Rhinebeck, Dutchess county, N. Y., for the second best two years old heifer, "Gazelle," silver cup or \$10. J. N. Blakeslee, Watertown, Conn., for the third best two years old heifer, Trans. Am. Institute. W. P. and C. S. Wainwright, Rhinebeck, Dutchess county, for the best yearling heifer, "Editha," silver cup or \$10. W. P. and C. S. Wainwright, Rhinebeck, Dutchess county, for the second

best yearling heifer, "Minna," silver medal. E. G. Faile, West Farms, N. Y., for the third best yearling heifer, "Kate," Trans. Am. Institute. J. N. Blakeslee, Watertown, Conn., for the best heifer calf, silver cup or \$10. E. G. Faile, West Farms, N. Y., for the second best heifer calf, "Fanny," silver medal. E. G. Faile, West Farms N. Y., for the third best heifer calf, Trans. Am. Institute.

Extra Stock.

J. N. Blakeslee, Watertown, Conn., for twenty-one head of Devon stock, \$10.

AYRSHIRES.

Judges—John Rae, John Dick, Hiram Nash.

Wm. Watson, West Farms, N. Y., for the best bull, silver cup or \$25. Wm. Watson, West Farms, N. Y., for the best two years old bull, silver cup or \$20. J. H. Rogers, Morristown, N. J., for the second best two years old bull, "Luke," silver cup or \$10. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the best yearling bull, silver cup or \$10. William Watson, West Farms, N. Y., for the best bull calf, silver cup or \$10. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the second best bull calf, silver medal. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the third best bull calf, Trans. Am. Institute. William Watson, West Farms, N. Y., for the best cow, silver cup or \$20. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the second best cow, silver cup or \$15. William Watson, West Farms, N. Y., for the third best cow, silver cup or \$10. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the best two years old heifer, silver cup or \$15. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the second best two years old heifer, silver cup or \$10. Robert R. Morris, Throg's Neck, Westchester county, N. Y., for the third best two years old heifer, "Lady Coit," Trans. Am. Institute. J. C. Tiffany, Coxsackie, Greene county, N. Y., for the best yearling heifer, silver cup or \$10. William Watson, West Farms, N. Y., for the second best yearling heifer, silver medal. William Watson, West Farms, N. Y., for the best heifer calf, silver cup or \$10.

ALDERNEYS.

Judges.—John Rae, John Dick, Hiram Nash.

A. V. Butler, No. 44 East Twenty-first-st., for the best two years old bull, silver cup or \$15.

MILKING COWS.

Judges—Seeley C. Roe, T. L. Wyckoff, A. H. Hubbard, Henry Robinson.

Robert H. Morris, Throg's Neck, Westchester county, N. Y., for the best cow in milk, "Cornelia," silver cup or \$25. James Bathgate, Fordham, N. Y., for the second best cow in milk, silver cup or \$15. James Bathgate, Fordham, N. Y., for the third best cow in milk, silver cup or \$10.

WORKING OXEN.

Judges—George M. Hubbard, Hudson McFarlane, Daniel Quinby, Asa B. Munn.

N. B. Smith, Woodbury, Conn., for the best pair of working oxen, silver cup or \$20. John B. Gedney, White Plains, N. Y., for the second best pair of working oxen, silver cup and \$15. A. A. Hotchkiss, Sharon, Conn., for the third best pair of working oxen, silver medal.

FAT CATTLE AND SHEEP.

Judges—George W. Allerton, W. H. Hoffman, Backus Culver, Thomas F. Devoe.

Bryant Lawrence, for the best pair of fat cattle, silver cup or \$20. John B. Gedney, White Plains, N. Y., for the second best pair of cattle, silver cup or \$15. Charles Symons, No. 152 Fourth avenue, for the best fat ox, silver medal. Robert R. Morris, Throg's Neck, Westchester co., N. Y., for the best fat cow, silver medal.

Fat Sheep.—Elnathan Gazley, Clinton, Dutchess co., for the best fat wether, silver cup or \$10. Elnathan Gazley, for the second best fat wether, \$5. John Wait, Goldenham, Orange co., N. Y., for a fat ewe, \$3. E. L. Barlow, La Grange, Dutchess co., N. Y., for an extra fine and large wether, diploma.

LONG WOOL SHEEP.

Judges—J. C. Tiffany, N. W. Wilson, John Carll, John D. Van Vechten.

Edward Haviland, Dutchess co.; N. Y., for the best buck, silver cup or \$10. Bathgate Brothers, Morrisania, N. Y., for the second best buck, silver medal. Nathaniel Hallock, Milton, Ulster co., N. Y., for the third best buck, Trans. Am. Institute. John Dick, White Plains, N. Y., for the best pen of ewes, silver cup or \$10. Wm. Watson, West Farms, N. Y., for the second best pen of ewes, silver medal. E. L. Barlow, La Grange, Dutchess co., for the third best pen of ewes, Trans. Am. Inst. Wm. Watson, West Farms, for the best pen of buck lambs, silver medal. Edwin Haviland, Dutchess co., N. Y., for the second best pen of buck lambs, Trans. Am. Inst. E. L. Barlow, La Grange, Dutchess co., N. Y., for the best pen of ewe lambs, silver medal. Wm. Watson, West Farms, N. Y., for the second best pen of ewe lambs, Trans. Am. Inst.

MIDDLE WOOL SHEEP.

Judges—J. C. Tiffany, N. W. Wilson, James D. Van Vechten, John Carll.

D B Haight, Washington, Dutchess co, N Y, for the best buck, silver cup or \$10. Alfred Broadway, No 68 Amos-street, for second best buck, silver medal. Francis Morris, Throg's Neck, N Y, for the third best buck, Trans Am Inst. Daniel B Haight, Washington, Dutchess co, N Y, for the best pen of ewes, silver cup or \$10. Edward Wait, Montgomery, Orange co, N Y, for the second best pen of ewes, silver medal. Daniel B Haight, Washington, Dutchess co, N Y, for the third best pen of ewes, Trans Am Inst. Alfred Broadway, 68 Amos-street, for a superior ewe, Trans Am Inst. Daniel B Haight, Washington, Dutches co, N Y, for the best pen of buck lambs, silver medal. Edward wait, Montgomery, Orange.co, N Y, for the second best buck lambs, Trans Am Inst. Edward Wait, Montgomery, Orange co, N Y, for the best pen of ewe lambs, silver medal.

MERINO SHEEP.

Judges—John Harold, Charles W Hull, Charles Wright.

A L Bingham, West Cornwall, Vt, for the best buck, silver cup or \$10. J N De Forest, Dover, Dutchess co, N Y, for the second best buck, silver medal. Chas Harrison, Orange co, N J, for the third best buck, Trans Am Inst. J N De Forest, Dover, Dutchess co, N Y, for the best pen of ewes, silver cup or \$10. A L Bingham, West Cornwall, Vt, for the second best pen of ewes, silver medal. J N De Forest, Dover, Dutchess county, N Y, for the third best pen of yearling ewes, Trans Amer Institute. A L Bingham, West Cornwall, Vt, for the best buck lambs, silver medal. J N De Forest, Dover, Dutchess county, N Y, for the second best pen of buck lambs, Trans Amer Institute. A L Bingham, West Cornwall, Vt, for the best pen of ewe lambs, silver medal. J N De Forest, Dover, Dutchess county, N Y, for the second best pen of ewe lambs, Trans Amer Institute. Chas Harrison, Orange, N J, for lambs, Trans Amer Institute.

SAXONY.

Judges—John Harold, Charles W Hull, Charles Wright.

Walter Wakeman, North East, Dutchess county, N Y, for the best buck, silver cup or \$10. Walter Wakeman, North East, Dutchess county, N Y, for the best pen of ewes, silver cup or \$10. Walter Wakeman, North East, Dutchess county, N Y, for the best pen of lambs, silver medal.

SHEPHERD'S DOGS.

Judges—H W Tibbits, Bryan Lawrence, James Dick.

George W Allerton, New York, for the best shepherd's dog, Trans Amer Institute.

SWINE.

Judges—Samuel G Striker, Peter H Brinck, Asa B Munn.

William Watson, West Farms, N Y, for the best boar over two years old, silver cup or \$10. Samuel Brewer, 132d-street and Eighth-avenue, for the second best boar over two years old, silver medal. William W Smith, corner Forty-first street and Eighth-avenue, for the third best boar over two years old, Trans Amer

Institute. George W Thatchen, Pelham, N Y, for the best boar over one year old, silver cup or \$8. J Mott, Newtown, N J, for the second best boar over one year old, silver medal. Samuel Brewer, 132d-street and Eighth-avenue, for the third best boar over one year old, Trans Amer Institute. Samuel Love, New-York, for the best sow over two years old, silver cup or \$10. Samuel Brewer, 132d-street and Eighth-avenue, for the second best sow over two years old, silver medal. Samuel Brewer, 132d-street and Eighth-avenue, for the third best sow over two years old, Trans Amer Institute. James Hough, Westchester, N Y, for the best sow over one year old, silver cup or \$8. John Murch, Newtown, L I, for the second best sow over one year old, silver medal. Samuel Brewer, 132d-street and Eighth-avenue, for the third best sow over one year old, Trans Amer Institute. Samuel Brewer, 132d-street and Eighth-avenue, for the best litter of pigs, silver cup or \$10. George W Thatchen, Pelham, N Y, for the second best litter of pigs, silver medal medal. Samuel Love, New-York, for the third best litter of pigs, Trans Amer Institute. C Van Winkle, Paterson, N J, for a mammoth hog, weight 1,200, lbs., silver cup or \$10.

POULTRY.

Judges—William L Laing, John Dick.

Roswell L Colt, Paterson, N J, for the best and greatest variety of poultry, silver cup or \$8. Henry Johnson, Paterson, N J, for the second best and greatest variety of poultry, silver medal. William Holden, Forty-fourth street and Sixth-avenue, New York, for the third best and greatest variety of poultry, Trans Amer Institute. R L Colt, Paterson, N J, for the best pair of turkeys, American Poulterer's Companion. Charles V Faile, West Farms, N Y, for the best pair of mongrel geese, American Poulterer's Companion. Wheeler Hale, Fifty-fourth street, New-York, for the best pair of tame geese, American Poulterer's Companion, R L Colt, Paterson, N J, for the best pair of Bremen geese, American Poulterer's Companion. R L Colt, Paterson, N J, for the best lot of Muscovy ducks, American Poultry Yard. Robert R Morris, Throg's Neck, Westchester county, N Y, for the best lot of common ducks, American Poultry Book. James C Taylor, Holmdel,

N J, for the best lot of Dorking fowls, American Poultry Yard. B Brockett, New Haven, Conn, for the best specimen of Chittagong fowls, American Poultry Yard. William Moore, for the best Shanghai fowls, five varieties, American Poultry Book. Wheeler Hale, Fifty-fourth street, New-York, for the second best Shanghai fowls, Trans Amer Institute. William Moore, for the best Spanish fowls, Trans Amer Institute. Henry Johnson, Paterson, N J, for the best Java fowls, Amer Poultry Book. Robert R Morris, Throg's Neck, N Y, for the best native or dunghill fowls, American Poultry Yard.

PREMIUMS

Awarded by the Managers of the 26th Annual Fair of the American Institute, October 1852.

AGRICULTURAL & HORTICULTURAL DEPARTMENT.

FARMS, MARKET GARDENS, AND FIELD CROPS.

Judges.—Nicholas Wyckoff, James De Peyster, Thomas Bell, Alanson Nash, David Banks.

E H Kimball, Flatlands, L I, for the best farm of 100 acres, silver cup or \$50. R B Coleman, Flatlands, L I, for the best farm of 50 acres, silver cup or \$25. James J Mapes, Newark, N J, for the best farm of 25 acres, silver cup or \$10. William Baity, Morrisania, N Y, for the best market garden, silver cup or \$20. Henry Robinson, Newburg, N Y, for the best field of wheat, 18 acres, silver cup or \$15. T Shillingsford, Clinton, N J, for the best field of corn, silver medal. J J Scofield, Morristown, N J, for an orchard of quinces, silver cup or \$10.

HOPS.

S Leland, Morrisville, Madison co, N Y, Wm B & A Miles, agents, 59 Chrystie street, for a bale of superior hops, silver medal. E Leland, Morrisville, Madison co, N Y, Wm B & A Miles, agents, 59 Chrystie street, for a bale of superior hops, silver medal.

WOOL.

Judges.—R Grant, John F Greene, Joshua Bailey.

H N Dox, Livingston, Nelson co, Va, for excellent specimens of Saxony wool, silver medal.

AGRICULTURAL PRODUCTIONS.

Judges.—Nicholas Wyckoff, Thomas Bell, John G Bergen.

Jacob P Giraud, jr, Bergen, N J, for the best general display of corn, silver cup or \$8. Archibald Henderson, Middle Village, L I, for the best forty ears of white corn, silver medal. Richard De Cantillon, Nyack, Rockland co, N Y, for forty ears of white corn, Farmer's Encyclopædia. Alfred Williamson, English Neighborhood, N J, for a sample of superior twelve-rowed white corn, Bridgman's Kitchen Garden. Jacob P Giraud, jr, Bergen, N J, for the best forty ears of yellow corn, silver medal. Irwin Stewart, Naval Hospital, Brooklyn, L I, for forty ears fine yellow corn, Farmer's Encyclopædia. Frederick Wright, East Newark, N J, for the best forty ears of sweet corn, Farmer's Encyclopædia. Jabez Robertson, Bedford, Westchester co, N Y, for the best Mediterranean wheat, silver cup or \$8. Solomon D Crispell, Hurley, Ulster co, N Y, for fine Mediterranean wheat, Farmer's Encyclopædia. William Schutt, Malden, Ulster co, N Y, for the best white wheat, silver medal. J P Davies, Saratoga co, N Y, for fine white wheat, Farmer's Encyclopædia. Ebenezer Sherman, Searsville, Orange co, N Y, for the best bushel of rye, silver medal. Solomon D Crispell, Hurley, Ulster co, N Y, for fine samples of rye, Browne's Trees of America. George Nesbitt, Delaware co, N Y, for the best bushel of oats, silver medal. Peter Crispell, jr, Hurley, Ulster co, N Y, for fine sample of oats, Stephen's Book of the Farm. Thomas Whitson, Flushing, L I, for superior black oats, Browne's Trees of America. Ebenezer Sherman, Searsville, Orange co, N Y, for the best buckwheat, Colman's European Agriculture. Solomon D Crispell, Hurley, Ulster co, N Y, for a fine sample of buckwheat, Allen's American Farm Book.

FLOUR AND MEAL.

Judges.—Edward Cromwell, Anselm B. Haner, Step. Valentine.

Hecker & Brothers, Croton Mills, Cherry street, N Y, for the best flour (wheat), silver cup or \$8. William Collins, "Mill of the Genesee," for the second best barrel of wheat flour, silver medal. B F Gibbs, Harpersfield, Delaware co, N Y, for superior rye and buckwheat flour, silver medal. Cornelius Stewart, Changewater Mills, N J, for kiln dried meal, silver cup or \$8.

Hecker & Brothers, Croton Mills, Cherry street, N Y, for the best prepared flour, gold medal. Quinby & Co, 177 Spring street, for a fine sample of prepared flour, diploma.

PRODUCTS OF THE DAIRY.—BUTTER.

Judges.—Laurence M. Luther, Peter Coutant, Peter B. Mead.

James S. Hopkins, Goshen, Orange co., N. Y., for the best specimen of butter, silver cup or \$15. S C Duryea, Crawford, Orange co, N Y, for the second best specimen of butter, silver cup or \$10. Charles Powell, Bloomingrove, Orange co, N Y, for the third best specimen of butter, silver medal. Thomas Helme, Goshen, Orange co, N Y, for the fourth best specimen of butter, Allen's American Farm Book. F A Brewster, Hampton, Windham co, Conn, for a sample of very superior butter, silver medal.

CHEESE.

Judges.—Jesse K Weeks, Charles M Carpenter, William S Badeau.

Z Smith, Vernon, Oneida co, N Y, for the best cheese, silver cup or \$15. J O Dale, Lewis co, N Y, for the second best cheese, silver cup or \$10. W W Dowd, Ashtabula co, Ohio, for the third best cheese, silver medal. William Pillmore, Lewis co, N Y, for the fourth best cheese, Farmer's Encyclopedia. Lysander Phelton, Gustavus, Ohio, for the imitation English cheese, silver medal. Robert Norton, Rushford, Alleghany co, N Y, for the best pine-apple cheese, Farmer's Encyclopedia. Samuel Muller, Lewis co, N Y, for fine specimens of Sapsago cheese, American manufacture, diploma. Lenton Hauge, Lewis co, N Y, for imitation Limburger cheese, of good quality, diploma.

HAMS.

Judges.—William Ebbitt, William Hall, P B Mead.

J A Amelung, 39th street, New York, for a patent covered ham, diploma. Horace Billings, Bairdstown, Illin., D L Lambert, 27 Water-street, agent, for a patent covered ham, diploma.

FRUIT.

Judges.—William Reid, Thos Hogg, Jr, P B Mead.

John W Bailey, Plattsburgh, N Y, for the greatest number of choice-named varieties of apples, silver cup or \$8. William S

Carpenter, Harrison, West Chester co, N Y, for the second greatest number of choice-named varieties of apples, silver medal. Ira Condit, Orange, Essex co, N J, for the third greatest number of choice varieties apples, four numbers Hovey's Fruits. William A Underhill, Croton Point, N Y, for the best table apples, Downing's Fruits. Caleb H Earl, Newark, N J, for the second best table apples, Thomas' Fruit Culturist. Messrs Hovey, Boston, Mass, for the greatest number of choice-named varieties of pears, silver cup or \$8. Jeremiah Briggs, Jamaica, L I, for the second best number of choice-named varieties of pears, silver medal. John Tonnelé, Bergen, N J, for the third best varieties of choice-named pears, four numbers Hovey's Fruits. S T Jones, New Brighton, Staten Island, for the best freestone peaches, Downing's Fruits. Henry N Mott, Shrewsbury, N J, for the second best freestone peaches, Thomas' Fruit Culturist. S T Jones, New Brighton, Staten Island, for the best clingstone peaches, Barry's Fruits. S T Jones, New Brighton, Staten Island, for second best clingstone peaches, Cole's Fruit Book. S T Jones, New Brighton, Staten Island, for the best dish of plums, Downing's Fruits. A P Cumings, Williamsburgh, L I, for the second best dish of plums, Cole's Fruit Book. William A Underhill, Croton Point, N Y, for the best quinces, silver medal. R T Underhill, Croton Point, N Y, for the second best quinces, Barry's Fruits. Roswell L Colt, Patterson, N J, for the third best quinces, Thomas' Fruit Culturist. Isaiah Tillson, Rosendale, Ulster co, N Y, for the best cranberries, silver medal.

GRAPES.

Judges.—P B Mead, Alexander Gordon, David Hunter.

R T Underhill, Croton Point, N Y, for the best Isabella grapes, silver medal. Wm. A Underhill, Croton Point, N Y, for very fine Isabella grapes, four numbers of Hovey's Fruits. Thomas R Porter, Mattewan Point, N J, for fine Isabella grapes, Allen, on the Vine. Wm A Underhill, Croton Point, N Y, for the best Catawba grapes, silver medal. R T Underhill, Croton Point, N Y, for very fine Catawba grapes, four numbers Hovey's Fruits. S T Jones, New Brighton, Staten Island, for fine Catawba grapes, Barry's Fruits. R T Underhill, Croton Point, N Y, for York Madeiras,

best native grape, other than Catawba and Isabella, silver medal. Roswell L Colt, Patterson, N J, for the best foreign grapes, silver medal. Theodore Fowler, Fishkill Landing, N Y, for superior flavored Isabella and Catawba grapes, Downing's Fruits.

DISCRETIONARY.

Caleb H Earl, Newark, N J, for a pyramid of apples, Downing's Landscape Gardening. Isaac Q Underhill, Secaucus, Hudson Co, N J, for a collection of apples, fine specimens, Rural Architecture. H J Redfield, Genesee co, N Y, for fine Doyenne pears, Barry's Fruits. Thomas R Porter, Mattewan Point, N J, for tomato figs, Downing's Ladies' Flower Garden. Lewis C Lighthipe, Orange, N J, for a collection of pears and apples, Barry's Fruits. Charles Harrison, Orange, N J, for a collection of apples, Cole's Fruit Book. Cornelius T Smith, Nyack, Rockland co, N Y, for a collection of apples, fine specimens, Barry's Fruits. Ira Harrison, Orange, N J, for a collection of apples, fine specimens, Cole's Fruit Book. William Rankin, Hillpark, Newark, N J, for a fine specimen of de l'Angouline pear, Trans Am Institute. R Mattison & Co, Genesee Falls' Nursery, Rochester, N Y, for a fine collection of apples and pears, Downing's Fruits. McIntosh & Co, Cleveland, Ohio, for the best general display of fruit, silver cup or \$10. E T R Applegate, Highstown, N J, for extra fine specimens of Gloria Mundi apples, Barry's Fruits. Samuel W Carhart, Monmouth, N J, for a fair seedling apple, Trans Amer Institute. Richard Reed, Clarksburgh, N J, for extra fine Gloria Mundi apples, Trans Am Inst. George Thompson, N J, for a bushel of excellent peaches, Trans Am Inst. S E G Rawson, New-York, for a fine show of apples, Trans Am Inst. R. K. Delafield, West Brighton, Staten Island, for several varieties of fine peaches, Trans Am Inst.

FLOWERS—SPECIAL EXHIBITION.

Judges—Robert Cawley, Isaac Buchanan, Daniel Boll, Alfred Bridgeman, Wm W White.

J S Burgess, gardener to William E Burton, Glen Cove, L I, for the best blooms of named dahlias, silver medal. George C. Thorburn, Astoria, L I, for very fine named dahlias, Boudoir Botany. Garret H. Stryker, sen, 52d street, New-York, for fine

named dahlias, Parson's Rose Manual. Mateo Donadi, Astoria, L I, for the best twenty named roses, silver medal. Charles More, 3d avenue and 98th street, New-York, for twenty-five named roses, Boudoir Botany. Mateo Donadi, Astoria, L I, for the best seedling roses, silver medal. John Cranstoun, Castle Point, Hoboken, N J, for the best floral basket, silver medal. Matthias Coleman, Williamsburgh, L I, for a beautiful floral basket, Boudoir Botany.

GENERAL DISPLAY OF FLOWERS.

Judges—P B Mead, Wm S Carpenter, David Hunter, Charles Knight.

George C Thorburn, Astoria, L I, for the largest and best display of dahlias, silver cup or \$15. Mateo Donadi, Astoria, L I, for a large and beautiful display of dahlias, silver cup or \$10. Matthias Coleman, gardener to A. P. Cummings, Williamsburgh, for a large display of beautiful dahlias, silver cup or \$8. Joseph Shaw, 6th avenue and 11th street, for a large display of fine dahlias, silver medal. Thomas Dunlap, 634 Broadway, New-York, for a display of beautiful dahlias, silver medal. William Wright, Newark, N J, for a fine display of dahlias, Downing's Horticulturist. Charles More, 3d avenue and 98th street, for a display of fine dahlias, Hovey's Mag of Horticulture. William Goddard, Craneville, N J, for a display of fine dahlias, Leucher on Hot Houses. Archibald Henderson, Middle Village, L I, for good supply of dahlias, Parson's Rose Manual. Mateo Donadi, Astoria, L I, for the largest and best display of roses and cut flowers, silver cup or \$8. William Cranstoun, gardener to E A Stevens, Hoboken, N J, for a beautiful display of cut flowers, silver medal. Charles More, 3d avenue and 98th street, New-York, for a fine display of roses and cut flowers, Parson's Rose Manual. Matthias Coleman, gardener to A P Cummings, Williamsburgh, for a display of beautiful flowers, Leucher on Hot Houses. Mrs A Henderson, Middle Village, L I, for the best display of bouquets, silver cup or \$8. John Cranstoun, Hoboken, N J, for a beautiful display of bouquets, silver medal. Mrs A A Smith, Brooklyn, L I, for a fine display of bouquets, Downing's Horticult-

turist. Richard Riddock, for a good display of bouquets, Hovey's Mag. of Horticulture. Mrs A Henderson, Middle Village, L I, for the best flower basket, silver cup or \$8. John Cranstoun, Hoboken, N J, for a beautiful flower basket, silver medal. Thos. Cavanach, Brooklyn, L I, for a beautiful flower basket, silver medal. A Henderson, Middle Village, L I, for the best basket of wild flowers, Boudoir Botany. John Cranstoun, Hoboken, N J, for a pretty bouquet of wild flowers, Parson's Rose Manual. A Henderson, Middle Village, L I, for the best floral design, silver cup or \$10. James McKenna, farmer to S T Jones, Staten Island, for a pretty design of dahlias and corn, Trans Am Inst. Sophia Kortum, for a pretty floral basket, Trans Am Inst.

VEGETABLES.

Judges—Wm M White, Isaac Buchanan, Charles Knight.

H C Murphy, Yellow Hook, L I, Patrick Condon, gardener, for the choicest assortment of culinary vegetables, silver cup or \$8. J A Perry, New Utrecht, L I, Nicholas Hally, gardener, for the second best assortment of culinary vegetables, silver medal. J P Giraud, Jr, Bergen, N J, for the greatest variety of vegetable roots for cattle, silver cup or \$8. J A Perry, New Utrecht, L I, N Hally, gardener, for the second best variety of vegetable roots for cattle, silver medal. J A Perry, New Utrecht, L I, Nich's Hally, gardener, for the best long blood beets, Bridgeman's Gardener's Assistant. J A Perry, New Utrecht, L I, Nicholas Hally, gardener, for the best turnip-rooted beets, Working Farmer. S T Jones, New Brighton, Staten Island, J McKenna, gardener, for the best sugar beets, Browne's Muck Book. William Harsell, Ravenswood, L I, T Ryan, gardener, for the best mangel wurtzel beet, Working Farmer. C G Winn, West Cambridge, Mass, for the best cauliflower, Working Farmer. J A Perry, New Utrecht, L I, Nicholas Hally, gardener, for the best drumhead cabbage, Buel's Farmer's Companion. J A Perry, New Utrecht, L I, Nicholas Hally, gardener, for the best Savoy cabbage, Buist's Kitchen Gardener. Charles Williams, Newark, N J, for the best table carrots, Working Farmer. J A Perry, New Utrecht, L I, Nicholas Hally, gardener, for the best parsnips for table, Trans. Am. Institute. Roswell L Colt, Patterson, N J, for the best celery, Farmer's Library.

Irwin Stewart, Naval Hospital, Brooklyn, L I, for the second best show of celery, Buist's Kitchen Gardener. S C Jackson, Astoria, L I, for the best egg plants, Brown's Muck Book. M M Petit, Rockaway, L I, for the best white onions, Bridgeman's Gardener's Assistant. Ebenezer Sherman, Searsville, Orange county, N Y, for the best yellow onions, Farmer's Dictionary. Ebenezer Sherman, Searsville, Orange county, N Y, for the best red onions, Allen's Farm Book. Wm S Carpenter, Harrison, Westchester co, N Y, for the best seedling potatoes, Stephens's Book of the Farm. Furman Hunt, Gowanus, L I, for the best potatoes for the table, Bridgeman's Gardener's Assistant. Roswell L Colt, Paterson, N J, for the best potatoes for cattle, Farmer's Dictionary. Joseph Bartlett, for the second best potatoes for cattle. Buel's Farmer's Companion. Wilson Hunt, Gowanus, Long Island, for the best cheese pumpkins, Farmers' Dictionary. Eli Ferry, Spuyten Duyvel creek, Westchester co, N Y, for the best pumpkins for cattle, Working Farmer. Abram Stockholm, Bushwick L I, for the best and largest pumpkin, Blake's Farmers' Everyday Book. Eli Ferry, Spuyten Duyvel creek, Westchester co, for the best crook-neck squash, Working Farmer. G W Cammann, Fordham, N Y, for the best and largest squash, Blake's Agriculture. Archibald Henderson, Middle Village, L I, for the best tomatoes, Farmers' Dictionary. Irwin Stewart, Naval Hospital, Brooklyn, L I, for the second best tomatoes, Buist's Kitchen Garden. Roswell L. Colt, Patterson, N J, for the best salsify, Buist's Kitchen Garden. Irwin Stewart, Naval Hospital, Brooklyn, L I, for the best white turnips, Bridgeman's Gardner's Assistant. Archibald Henderson, Middle Village, L I, for the best yellow turnips, Buist's Kitchen Garden. Roswell L Colt, Patterson, N J, for the best ruta бага, Farmers' Dictionary.

Discretionary.—Jotham, Wilson Bloomingdale, N Y, for three extra large squashes, Trans Am Inst. John W Duryea, New Utrecht, L I, three extra large heads of cabbage, Trans Am Inst. Reuben B Clark, W Washington market, N Y, for a peck of extra fine Carolina potatoes, Trans Am Inst. Oneida Community, N Y, for a peck of extra fine pinkeye potatoes, Trans Am Inst. Samuel W Carhart, Monmouth, N J, for an extra large pumpkin,

Trans Am Inst. Samuel Auld, 22 West-street, for a superior quality of potatoes from French seed, Trans Am Inst.

MISCELLANEOUS ARTICLES.

Reuben B Clark, West Washington market, for the best honey in the comb, Miner's Bee Manual. Whittington & Wilde, 7 Dutch-street, for the best mustard, diploma. Charles W Walker, Atlantic Docks, Brooklyn, L I, for a fine specimen of mustard, diploma. Robert Burnet, 374 Broadway, for superior wire works, silver medal. Jules Lachaume, Yonkers, for beautiful terra cotta flower pots, diploma. John A Amelung, 39th-street, N Y, for a fine specimen of lard, diploma. Jane McCulloch & Co, 237 Washington-street, for the best assortment of preserves, silver medal. Mrs Sarah Goodwin, No. 9 State-street, for a pretty vase of wax fruit, Trans Am Inst. Mrs D L Well, Brooklyn, L I, for a vase of well executed wax fruit, Trans Am Inst. Mrs Richard Charlton, west 22d-street, for a beautiful vase of wax flowers, diploma. Mrs Edgar A Barber, Albany, N Y, for a splendid vase of artificial flowers, diploma.

AGRICULTURAL IMPLEMENTS.

Judges—Paul Stillman, John McNary, A O Houghton, John G Bergen.

Hadley Falls Co, Hadley, Mass, A B Allen & Co, agents, 189 Water-street, for the best cheese press, silver medal. Solomon W Ruggles, Jr, Hartford, Ct, for the second best cheese press, diploma. Longett & Griffing, 25 Cliff-street, for the best cider mill and press, silver medal. John B Wickersham, 312 Broadway, for the best parallel wire fence, gold medal. S Wilkinson, Middletown, N Y, for the best grain cradles and scythe snath, silver medal. Parish Furnace Co, D J Millard, Clayville, Oneida co, for superior hay knives, scythes and forks, (a gold medal having been before awarded) diploma. S Harris, Pine Plains, N Y, for superior grain and grass scythes, silver medal. Tuttle Manufacturing Co, for superior steel hoes and rakes, silver medal. J W Quincy, 81 John-street, for the best scythe snath with patent fastening, diploma. Ralph & Co, 23 Fulton-street, for the best fanning mill; "Grant's patent," (a silver medal having been before awarded)

diploma. E J & M Jerome, Hempstead Branch, L I, for the second best fanning mill, diploma. J Arkson, Jersey City, N J, for the best guage clevis for plows, diploma. Jewell, Hall & Co, Rochester, N Y, for the best grain separator for milling, silver medal. J N & D Ellmore, Elmira, N Y, for the second best grain separator, diploma. John D Taplin, Dutchess co, N Y, for a superior grain thresher and cleaner, silver medal. J G Gilbert, for a superior grain thresher and cleaner, silver medal. E J & M Jerome, Hempstead Branch, L I, for the second best thresher and cleaner, diploma. J W Jenkinson, Hudson, N Y, for a good cheap iron post for fences, diploma. Ralph & Co, 23 Fulton street, for excellent wrought iron wheelbarrows, diploma. Longett & Griffing, 25 Cliff street, for superior wrought iron wheelbarrows, diploma. D S Hall, Lowell, Mass, for the best corn and cob crusher, diploma. J G Gilbert, 216 Pear street, for the best hay, straw, and corn stalk cutter and crusher, silver medal. H W Bertholf, for the second best hay and straw cutter, diploma. T G Moore, 123 Henry street, for a good carriage jack, diploma. A S Babcock, Albany, N Y, for the best draining tile, silver medal. A & T Crane, Newark, N J, for the best gate, silver medal. M P Coons, Troy, N Y, for a good sample of ornamental fence, silver medal. John G Perry, Kingston, R I, for the best meat cutter, diploma. Ralph & Co, 23 Fulton street, for the best wood and metal meat cutter, diploma. Longett & Griffing, 25 Cliff street, for the best sub-soil plow, silver medal. J D Willoughby, Carlisle, Pa, for the second best grain drill, diploma. A B Allen & Co, 189 Water street, for the best display of agricultural and horticultural implements, gold medal. Ralph & Co, 23 Fulton st, for a good display of agricultural implements, silver medal. W F Ketchum, Buffalo, N Y, for a mowing machine, gold medal. No. 516 Schnebly's reaping machine, No. 1,456 Rapeljes & Co's reaping machine, No. 1595 Burrell's grain reaper, No. 1,841 Forbush's reaping machine, No. 1,941 Manny's combined mowing machine, No.—, McCormick's mowing and reaping machine, and N. 51, Chaffe's model reaping machine.

These machines all show a high order of merit, and several of them have done good service in both kinds of work ; one of them is entirely new, and two of them have not been in a condition for

the committee to know what they might do. Under these circumstances, the committee have thought they could not give such an opinion of their comparative merits as would be creditable to the Institute, or just to the exhibitors, and therefore suggest that this statement be published.

J W Wright, Chicago, Illinois, for Atkin's automaton raker, silver medal. Benjamin F Miller, 74 Trinity Place, for wrought iron picket fence, diploma. Ralph & Co, 23 Fulton street, for a good corn mill, diploma. Longett & Griffing, 25 Cliff street, for the best assortment of agricultural implements, gold medal. Longett & Griffing, 25 Cliff street, for the best grain drill, silver medal. Longett & Griffing, 25 Cliff street, for the best horse rake, silver medal. Wm R Palmer, North Carolina, for a superior threshing machine, silver medal. John Jones, 189 Water street, N Y, for the best garden syringe, silver medal. Mark Poole, Myrtle-avenue, Brooklyn, for the second best garden spring, diploma. Mark Poole, Myrtle-avenue, Brooklyn, for a greatly improved watering pot, silver medal.

TESTING OF PLOWS.

Judges.—Ralph Hall, D K Sherwood, A M Suydam.

John Moore, 193 Front street, N Y, for the best plow, combining the greatest number of requisites to plow a furrow 12 inches wide and 8 inches deep, silver cup or \$10. B Myer, Newark, N J, for the second best plow, combining the greatest number of requisites to plow a furrow 12 inches wide and 8 inches deep, silver medal.

PLOWING MATCH.

Judges.—Nicholas Wyckoff, John M Ferrier, A O Houghton.

Joseph Swannell, New York city, for the best plowing with Ruggles, Nourse & Mason's plow, No. 73½, silver cup or \$15. Augustus Carlton, Sutton, Worcester county, Mass, for the second best plowing, silver cup or \$10. Asa B Munn, Orange, N J, for the third best plowing, silver medal.

SPADING MATCH.

Judges.—Alanson Nash, Abraham Turnure, Thomas Williams.

Archibald Henderson, Newtown, L I, for the best spading, silver cup or \$10. James Malony, Nyack, Rockland co, N Y, for the second best spading, silver cup or \$8. Thomas Daily, Nyack, Rockland co, N Y, for the third best spading, silver medal.

MANUFACTURING AND MECHANICAL DEPARTMENT.

AGRICULTURAL AND MECHANICAL DRAWINGS.

Judges.—T. S. Shepard, John B. Snook, John W. Ritch.

E. G. Thompson, 12 Dey-street, for the best architectural drawing, diploma. C. F. Anderson, 44 Wall-street, for an architectural drawing, diploma. J. H. Chapel, Williamsburgh, L. I., for the best mechanical drawing, silver medal.

BATHS.

Judges—Edward Gray, D. M. Reese, Isaac Greene.

Ferdinand Holme, 9 Oliver-street, for the best bath, silver medal. Windle & Co., 56 Maiden Lane, for the second best bath, diploma.

Minor's Works.

John W. Locke, 47 Ann-street, for a bath, Webster's Dictionary.

BELLS.

Judges—Edward Hodges, Thomas Hall, James. P. Allaire.

Meneely's Sons, West Troy, Hitchcock & Co., agents, 116 Broadway, for church bells. A gold medal having been before awarded, diploma.

BLANK BOOKS AND BOOK-BINDING.

Judges—Thomas S. Smith, Edward G. Taylor, George C. Mann.

C. S. Boynton, 160 William-street, for the best blank book, gold medal. Bowne & Co., 150 Pearl street, for the second best blank book, silver medal. Collins, Bowne & Co., 174 and 176 Pearl-street, for the third best blank books, diploma. Edward Walker & Sons, 114 Fulton-street, for the best bookbinding, (Virtue's bible,) gold medal. Wm. M. Thompson, 169 William-st., for a superior specimen of pictorial binder's stamps, gold medal.

BOATS AND OARS.

Judges—Eugene Farr, Wm. Dela Montagnie, R. Fish.

C. J. Thoms, 178 Chambers-street, for the best race boat, silver medal. E. Page, 20 West-street, for the best oars, silver medal.

GENT'S BOOTS AND SHOES.

Judges—N. A. Rogers, Jos. Bradley, P. S. Underhill.

John Ready 127 Nassau-street, for the best patent leather boots, and the best calf dress boots, silver medal. Edwin A. Brooks, 150 Fulton street, for a good cork sole boot, diploma. William Snell, 43 Fulton-street, Brooklyn, L. I., for an ingenious crimping machine for moulding gaiter boots, silver medal.

LADIES BOOTS AND SHOES.

Judges—Chas. Middleton, A. S. Rogers, Henry Nunns.

Benjamin Shaw, 73 Canal-street, for the best white satin fair stitched gaiters, and a case of superior ladies' fancy gaiter boots, and slippers, gold medal. S. Cantrel, 336 Bowery, for the best case of imitation of French shoes and boots, silver medal. Geo. Nicholls, New-York, for the workmanship on white gaiter boots, for very superior talent, gold medal.

BRITANNIA WARE.

Judges—Lucius Hart, James Y. Watkins.

John H. Whitlock, Troy, N. Y., for cast and turned Britannia ware. A silver medal having been before awarded, diploma. Yale & Curtis, 106 Elm-street, for a safety fluid lamp, diploma.

BRUSHES.

Judges—R. Tweed, J. C. Skaden, H. R. Mount.

William Cross, 25 John-street, for specimens of hair brushes, diploma. Steele & Co., 53 Nassau-street, for specimens of feather brushes. A gold medal having been before awarded, diploma.

CABINET WARE.

Judges—J. C. Baldwin, G. Ponsot, E. W. Hutchings.

P. Weller, 178 Centre-street, for the best carved mouldings, silver medal. Christophe Volkert, 93 Elm-street, for the second best carved mouldings, diploma. Isaac Duryea, Broome-street, for a bureau and wash stand, made of red cedar, silver medal.

Thomas Riley, 71 Bowery, for inlaid boxes, diploma. M Fischer, 39 Avenue D, for inlaid boxes, diploma. Alfred Speer, Aquacknock, N J, for the best secretary and writing desk, diploma. Jas H Cook, 36 Broadway, for the second best writing desk, diploma. J H Fraser, 144 Chambers street, for beautiful show cases, silver medal. G Van Zile & Co., 29 Bethune street, for the best newel posts, silver medal. Christophé Volkert, 93 Elm street, for the best inlaid wood work, silver medal. Peter Q Smith, 343 Atlantic street, Brooklyn, L I, for a mahogany secretary, diploma. J & S C Crombie, Nashua, N H, N P Kimball, agent, 74 Beekman st, for a front door and sashes, a silver medal having been before awarded, diploma.

Minor's work.

C A S Holder, 188 Spring-street, for a superior piano-forte case, Webster's Dictionary.

CAKES AND CONFECTIONARY.

Judges—James R Smith, Wm Hall, John W Chambers.

Benjamin Wilt, 324 Grand-street, for the best plum cake, silver medal. Robert Anderson, 250 Fulton-street, Brooklyn, L I, for the best ornamented cake, diploma. H. Tateoesyan, Williamsburgh, L I, for superior fig paste, diploma.

CARPETS.

Judges—Josiah P. Knapp, George W Betts.

A Glominski, of the Troy Carpet Mills, N Y, George Hastings & Co, agents, 5 South William-street, for the best designs for carpets, gold medal.

CARRIAGES, SLEIGHS, AND AXLES.

Judges—John R Lawrence, Isaac Ford, Laurens Reeve.

Isaiah C Wolf, Newark, N J, for the best top wagon, gold medal. John C Ham, 360 Broadway, for the second best light top wagon, silver medal. Smith & Sons, East Brooklyn, L I, for the best wagon without top, gold medal. L N Hermance & Co, Kingston, N Y, for the best sleigh, silver medal. Alfred E Smith, for the best steel converted patent axles, silver medal. Matthias Souverel, Orange, N J, for a carriage shaft safety bolt, silver medal.

Holmes & Bassett, 100 Maiden-lane, for carriage trimmings and rosettes, diploma. Arnold Stivers, Newark, N J, for carriage mountings, silver medal. C L Chaplain, Newark, N J, for good spokes, diploma. Bedford & Crane, Newark, N J, for good carriage bows, diploma. C A Ball, 195 Sixth-avenue, for a pair of detached harness shafts, silver medal. M G Hubbard, Rochester, N Y, for a self-adjusting short-turning carriage springs and gearing, gold medal. John Chatterton, 351 Broome-street, for a pole-hook for light wagons, diploma.

CASTINGS.

Judges—N M Stratton, Lewis S Dod, James L Jackson.

P Schwickhardt, Williamsburgh, L I, J G Gilbert, agent, 216 Pearl-street, for the best castings, gold medal. Morritz Seelig, Williamsburgh, L I, J G Gilbert, agent, 216 Pearl-street, for the second best casting, gold medal. Slater & Steele, Jersey city, for castings and machinery, silver medal. Adolph Leconte, Staten Island, for a zinc and bronze statuette, galvanized, gold medal.

CLOAKS AND MANTILLAS.

Judges—H McCune, A M Cameron, Wm B McKenzie, Charles Street.

George Brodie, 51 Canal-street, for the best white embroidered satin cloak, gold medal. Molyneux Bell, 58 Canal-street, for the best embroidered velvet cloak, gold medal.

CLOCKS AND WATCHES.

Judges—J Y Savage, Jr, Samuel Hammond.

John Stokell, Jr, 189 Front-street, Brooklyn, L I, for the workmanship on an eight-day skeleton clock, gold medal. J H H Hawes, Ithaca, N Y, for a calendar clock, for its mechanical arrangement, gold medal. Jerome Manufacturing Co, New Haven, Conn, Chauncey Jerome, agent, 49 Cortlandt-street, for an inlaid clock, diploma. Litchfield Manufacturing Co, Litchfield, Conn, F C Andrews, agent, 3 Cortlandt-street, for an inlaid clock, diploma.

CLOTHING.

Judges—John T Henry, E W Tryon, Israel Brown.

Ellis & Isleton, 439 Broadway, for the best children's clothing, gold medal. P L Rogers & Co, corner Fulton and Nassau-streets, for the second best children's clothing, silver medal. Herman Schwietering, 42 John-street, for a superior specimen of buttons, silver medal. Mariner's Family Industrial Society, 322 Pearl-st, for specimens of clothing highly creditable, diploma. Samuel M Perkins, Auburn, N Y, for patent seamless coats and vests, gold medal. L W Badger, Auburn, N Y, for patent seamless gloves, mittens and pantaloons, diploma.

COMBS.

Judges—G R Cholwell, L. Chapman.

S C Noyes & Co, Mass, Noyes & Grady, agents, 6 Murray street, for superior horn dressing combs, silver medal. J Russell, Williamsburgh, L I, for ornamental combs, silver medal. A Moulton, 53 Nassau street, for superior shell combs, silver medal.

COOPERS' WORK—MINORS.

Judges—Hugh Aikman, Francis O'Brien, J McJ Bensel.

J W Hopkins, 153 Third street, for the workmanship on a small keg, Webster's Dictionary. J. M. Hopkins, 153 Third street, for the workmanship on a small keg, Webster's Dictionary.

COTTON GOODS.

Judges—Haynes Lord, Wm. E. Shepard.

Robert Rennie, Lodi, N J, Sturges, Shaw & Co, agents, 54 Pine street, for printed lawns, gold medal. J J Kilton, Coventry, R I, Lord, Warren, Salter & Co, agents, 46 Broad street, for the best brown sheeting, silver medal. Sieam Cotton Manufacturing Co, Providence, R I, for the finest brown sheeting, silver medal. Wamsutta Mills, New-Bedford, Mass, Willard & Wood, agents, 40 Broad street, for the best bleached shirtings, (a gold medal having been before awarded,) diploma. Williamsville Co, Providence, R I, for the second best bleached shirting, silver medal. New-York Mills, Utica, N. Y., Charles Carville, agent, 17 Broad street,

for superior shirtings, twilled jeans, and pantaloons, gold medal. White Rock Manufacturing Company, Nesmith & Co, agents, 52 Broad street, for bleached shirtings, diploma. B S Walcott & Son, New-York Mills, N Y, Charles Carville, agent, 17 Broad street, for cotton shirtings, silver medal. Graniteville Manufacturing Company, Graniteville, S C, Spring, Bradley & Buffum, agents, 22 Broad street, for brown shirtings and sheetings, diploma. Graniteville Manufacturing Co, Graniteville, S C, Spring, Bradley & Buffum, agents, 22 Broad street, for brown drills, diploma. J & W Slater, Slatersville, R I, Spring, Bradley & Buffum, agents, 22 Broad street, for superior corset jeans, diploma. Lancaster Company, Lancaster, Mass, Schouler, Newton & Cumston, agents, 44 Broad street, for plain ginghams, silver medal. A & W Sprague, Providence, R I, Hoyt, Tillinghast & Co., agents, 54 Broad street, for the best madder prints, gold medal. G M Richmond, Providence, R I, Nesmith & Co, agents, 52 Broad street, for madder prints, diploma. Globe Printing Co, Fall River, Mass, Hoyt, Tillinghast & Co, agents, 54 Broad street, for purple prints, diploma. Philip Allen & Sons, Providence, R I, Lawrence, Clapp & Co, agents, 35 Broad street, for the best prints, gold medal. American Print Works, Fall River, Mass, for the second best prints, silver medal. American Print Works, Fall River, Mass, for printed shirtings, diploma. John N Genin, 214 and 513 Broadway, for superior hosiery, silver medal. Joseph Milward, 31st street, near 8th avenue, for superior lace shawls, silver medal. Wm Beatty, Philadelphia, Pa, McGregor, Timpson & Co, agents, 47 Broad street, for cotton diaper, diploma. American Linen Thread Company, Mechanicsville, Saratoga co, N Y, for the best linen thread, (a gold medal having been before awarded,) diploma. N G B Dexter, Pawtucket, R I, for superior darning and filling cotton, silver medal. John Barnes & Co, Fountain Springs, R I, Burnham, Plumb & Co, agents, 43 Cedar street, for colored thread, diploma. Elizabeth Pearne, 47 Downing street, for linen, and linen pillow cases, silver medal. Atlantic Duck Company, East Haddam, Conn, Benj Flanders & Co, agents, 80 South street, for the best cotton duck, silver medal. Woodbury Mills, Baltimore, Md, Benj Flanders & Co, agents, 80 South street, for the second best cotton duck, diploma. Phenix

Mills, Paterson, N J, H W Peck & Co, agents, 130 Front street, for cotton duck, diploma.

CUTLERY.

Judges.—W N Seymour, Thos C Van Hoesen, Francis Many.

Ames Manufacturing Co, Chicopee, Mass, Hitchcock & Co, agents, 116 Broadway, for handsome dress swords, gold medal. Waterville manufacturing Co, Waterbury, Conn, F G Wheeler & Co, agents, 23 John-street, for the best variety of pocket cutlery; a gold medal having been before awarded, diploma. South river cutlery co, Conway, Mass, P W Gallaudet, agent, 81 John-street, for fine specimens of ivory table cutlery, silver medal. Lamson, Goodnow & Co, 7 Gold-street, for superior cook's knives; a gold medal having been before awarded, diploma. Eagle works, Winsted, Conn, R N Perley, agent, 77 Platt-street, for ivory handles on knives, diploma.

DAGUERREOTYPES.

Judges.—H C Shumway, Chas W Jarvis, J N Gimbrede.

J Gurney, 189 and 349 Broadway, for the best daguerreotypes, gold medal. Mead and Brothers, 233 Broadway, for the 2d best daguerreotypes, silver medal. Brinckerhoff & Co, 383 Broadway, for the 3d best daguerreotypes, diploma. Samuel Root, 363 Broadway, for imitation crayon daguerreotypes, silver medal. S A Holmes, 239 Broadway, for excellent daguerreotype views, diploma. C C Harrison, 86 Duane-street, for camera instruments, a gold medal having been before awarded, diploma. H Stidolph, 41 Hester-street, for imitation metallic gilding on wood, silver medal.

DIES AND CHASING.

Judges.—Wm. Gale, W. H. Bridgens.

L T Boland, 178 Fulton-street, for the best crests and ornaments; a silver medal having been before awarded, diploma. Thomas Pittis, 296 Pearl-street, for the best stencil plates; a silver medal having been before awarded, diploma. C C Wright, 52 John-street, for superior dies for medals, gold medal.

MINOR'S WORK.

Frederick Loew, New-York, for a pair of dies for silversmiths, Webster's Dictionary.

DENTISTRY.

Judges.—F. H. Clark, Geo Clay, J Parmly.

Ambler & Avery, 31 Washington Place, for the best dental mechanism, and a new mode of attaching spiral springs to a full set of teeth, gold medal.

MINOR'S WORK.

Albert McNulty, 21 Bond-street, for superior dental mechanism, Webster's Dictionary.

DRUGS AND CHEMICALS.

Judges.—James R Chilton, Wm W Ellet, Isaiah Deck, John H Currie.

Withington and Wilde, 7 Dutch-street, for the best powdered spices, diploma. C Watson, Lowell, Mass, for the second best powdered spices, diploma. Wm. Colgate & Co, 4 and 6 Dutch-street for the best pearl starch, silver medal. F. Ramppen, corn. Court and Dean-street, Brooklyn, for the second best pearl starch, diploma. S Kuh & Kriescher, 58 Goerck-street, for the best chemical preparations, acids, &c., silver medal. T C Jones, & Co. 757 Washington-street, for superior chemical preparations, silver medal. John Van Deventer, 87 Barclay-street, for the best paste blacking; a silver medal having been before awarded, diploma. E C Hazard, 68 Barclay-street, for the second best paste blacking, diploma. J. Sniffin, Jr, & Co, Brooklyn, for the best sperm candles, silver medal. Josiah Macy & Sons, 189 Front-street, for the second best sperm candles, diploma. William Walker, 166 Cherry-street, for the best assortment of perfumery; a silver medal having been before awarded, diploma. J G A Sacca, 54 and 56 Dey-street, for the second best assortment of perfumery, diploma. Wm Colgate, 4 and 6 Dutch-street, for the best family washing, and fancy soaps, gold medal. North American Soap Co, cor Rutgers and Cherry street, for the second best washing soap, diploma. Jointa Lime Co., Glenn's Falls, N Y, for the best burned lime, diploma. H W Monroe, 37 Chamber-street, for the best mineral paint, diploma. Frederick Desbrosses, Manhattanville, N Y, for the best stearine candles, silver medal.

C Manly, Greenpoint, L I, for the best prussiate potash, silver medal. Israel Howe, Troy, N Y, for the second best prussiate potash, diploma. E. Gunning, 148 Eighth avenue, for the best leather preservative paste, diploma. B T Babbitt, 70 Washington, for the best yeast powder, diploma. Thomas Andrews, 136 Cedar street, for the best saleratus and soap powder, silver medal. Tilden & Co, New Lebanon, N Y, for the best medicinal extracts, a silver medal having been before awarded, diploma. American Pharmaceutical Institute, 39th street, between Eighth and Ninth avenues, for the second best medicinal extracts, diploma. S O Dunbar, Taunton, Mass, for the best black writing ink, silver medal. J E Hover, Philadelphia, Pa, for the second best black ink, diploma. J Thompson, Williamsburgh, L I, James Pyle, agent, 114 Warren street, for the best transparent soap and washing compound, diploma. William Johnson, 55 Frankfort street, for the second best transparent soap, diploma. Belling & Vogel, 460 Houston street, for the best vermicelli and macaroni, silver medal. Joseph Lombard, 350 Sixth street, for second best vermicelli and macaroni, diploma. L C Dale, Boston, Mass, for excellent tooth powder, diploma. Walter Baker & Co, Dorchester, Mass, for the best chocolate and cocoa, silver medal. J Govearts, 376 Pearl street, for the best sweet chocolate and cocoa, silver medal. Zinser & Scholl, 175 William street, for the best sealing wax and bleached shellac, diploma. W W Rose, 17 Wall street, for second best sealing wax, diploma. Hastings & Co, Boston street, for the best polishing material, diploma. R Johnson, 65 Greet street, for the best starch polish, diploma. W Colgate & Co, 4 and 6 Dutch st, for a fine quality corn starch for culinary purposes, diploma. J G Minor, 39 Wall street, for metallic paint, diploma. C H Meyer, 6th avenue, between 40 and 41st street, for excellent refined camphor, diploma. Arthur Nix, Macomb's Dam, for superior bleached wax and wax tapers, silver medal having been before awarded, diploma. Jas Macombie, 601 Broadway, for furniture polish, diploma. J R Burdsall, 84 Maiden Lane, for arnica liniments, diploma. L Feuchwanger, 141 Maiden Lane, for a cabinet of chemical and other preparations, silver medal. Gail Bordon, Jr, Galveston, Texas, for meat biscuit and fine beef lard, a gold medal having been before awarded, diploma. Jackson & Domeneck,

142 Water street, for a fine sample of crystalized piperine, silver medal. Jessup & Childs, 243 West Sixteenth street, for pure white lead in oil, diploma. Eugene Dupey, 609 Broadway, for flavoring extracts of good quality, diploma. J Husband, Philadelphia, Pa, for pure calcined magnesia, diploma. Wm Blake, 84 Pearl street, for fire-proof paint, a silver medal having been before awarded, diploma. Alden & Co, 113 Chambers street, for cream coffee and concentrated milk, silver medal. S O Dunbar, Taunton, Mass, for liquid magnesia, diploma. Jas Pyle, 114 Warren street, for Chinese washing fluid, diploma. C De Burg, N Y, A B Allen & Co, agents, 189 and 191 Water street, for super phosphate of lime for manure, diploma. Lindermann & Stéffins, 117 John street, for French varnish, diploma.

EDGE TOOLS, HARDWARE, &C.

Judges—Geo. H. Swords and J. Conger Berry.

O & C Bush, Fall River, Mass, for chain bolts, diploma. B E Woodall, West Winsted, Conn, for polished steel fire sets and stands, silver medal. C C Spring & Co, Worcester, Mass, J Upson, agent, 15 Gold street, for improved screw wrenches, diploma. Abraham Krowl, corner 8th avenue and 38th street, for superior made horse shoes, diploma. B Hammond, North Bennington, Vt, W N Seymour & Co, agents, 4 Chatham Square, for steel squares, diploma. W & B Douglass, 48 Dey street, for wrought iron butts, diploma. Goodwin & Byron, 669 Hudson street, for superior saws, diploma. Claude Ducreaux, 364 Broadway, for a sample of cut screws, silver medal.

Waterbury Brass Co, L Wetmore, agent, 11 Spruce-street, for brass kettles ; a gold medal having been before awarded ; diploma. J W Gascoigne, 187 Pearl-street, for iron wire, diploma. Wm C Lane, East Thirty-ninth-street, near Third-avenue, for a pair of hooks for hoisting boxes or barrels, diploma. W S Eaton, Cambridgeport, Mass., Dunlap & Wright, agents, 85 Fulton-street, Brooklyn, L I, for patent centre bitts, diploma. C W Bontgen & Co, Newark, N J, for superior skates, silver medal. S Jagers, Newark, N J, Reynolds & Daniels, agents, 13 Gold-street, for specimens of rules, diploma. Tuttle Manufacturing Co, Naugatuck, Conn, for superior steel hoes and rakes, silver medal. Massachu-

setts Shovel Co, Worcester, Mass, S Baleom, agent, for patent improved shovels, diploma. J M Wells, Clinton county, N Y, for drawing knives, diploma. W & B Douglas, Middletown, Conn, John Bailey, agent, 48 Dey-street, for galvanized pump chains, diploma. W Churchill, Hamden, Conn, Long & Davenport, agents, 10 Platt-street, for superior augers; a silver medal having been before awarded; diploma. Thomas Douglass, 5 Platt-street, for superior steel squares, diploma. Benedict & Burnham Manufacturing Co, Waterbury, Conn, John Bailey, 48 Dey-street, for rolled brass and German silver, silver medal. R H & J G Isham, 103 Front-street and 83 Pearl-street, for emery and sand paper, and cloth; a silver medal having been before awarded; diploma. Davis & Blake, Portland, Me, Thomas Dutton, 83 Pearl-street, for a patent box opener, diploma. Benedict & Burnham Manufacturing Co, Waterbury, Conn, John Bailey, agent, 48 Dey-street, for brass, copper and German silver wire, silver medal. Clark & Brooks, Chester, Conn, Pettibone & Co, agents, 14 Platt-street, for iron screw hooks and eyes, diploma. Hayden & Sanders, 219 Pearl-street, for superior oil cans, diploma. Lovett Morse, Taunton, Mass, for cut tacks and brads, diploma. Crocker & Co, Old Colony Iron Co, Taunton, Mass, E J Bussing & Co, agents, 33 Cliff-street, for very superior shovels, diploma. D. Simmons & Co, Cohoes Falls and 7 Gold-street, for very superior finished hatchets; a gold medal having been before awarded; diploma. H. Aiken, Franklin, N H, for the best saw-set and improved brad-awl and other tools, silver medal.

ENAMELED IRON AND IRON FURNITURE.

Judges—Jordan L Mott, Robert Marshall, Jas R Walter.

Salamander Marble Co, 135 Water-street, for the best enameled mantels, gold medal. J H Keyser & Co, 56 Cliff-street, for the second best enameled mantels, silver medal. Enamel Marble Mantel Co, 3 John-street, for the third best enameled mantels, silver medal. Mirror Mantel Co, Boston, Mass, Geo Walker, 89½ Leonard street, and Chilson Richardson & Co, 374 Broadway, agents, for beautiful cast iron mirror mantels; a gold medal having been before awarded; diploma. A K Pattison, 407 & 409 Cherry-street, for beautiful enameled stair-rods, silver medal. M Gould,

Platt-street, for the best German silver and brass stair-rods, silver medal. J W Sergeant, 31 & 33 Dey-street, for the second best brass stair-rods, diploma. T J Gillies, 308 Broadway, for superior spring chains, gold medal.

ENGRAVING.

Judges—F C Strype, Henry W Herrick, Wm Howland.

A H Ritchie, 23 Chambers-street, for the best engraving on steel, gold medal. T B Welch, Philadelphia, Pa, Wm Terry, agent, 113 Beekman-street, for the second best engraving on steel, silver medal. John E. Buttre, 61 Fulton-street, for the third best engraving on steel, diploma. A W Overbaugh, 21 Horatio-street, for a beautiful specimen of engraving on gold, gold medal. Chas Maggii, 7 Nassau-street, for the best specimen of lithography, silver medal. Endicott & Co, 59 Beekman-street, for the second best specimen of lithography, diploma. Wm Roberts, 13 Chambers-street, for the best specimen of wood engraving, silver medal.

Minors' Work.

D Van Vleck, 305 Fifth-street, for the best wood cut, Webster's Dictionary. H H Nichols, 131 East Twenty-eighth-street, for the second best wood cut, Webster's Dictionary.

FINE ARTS.

Judges—John McDougal, J N Gimbrede, C W Jarvis.

John Kennedy, Twenty-third street, between Second and Third avenues, for an elegant marble mantel-piece, gold medal. J F Lippitt, corner of Greenwich and Clarkson streets, for a mantel and statue of American marble, silver medal. Joseph Lassalle, 140 Pacific-street, Brooklyn, for a copy of the Greek slave in bronze, silver medal. Richard Barter, 97 Third-street, for a composition bust of Catherine Hayes, diploma. Louis Bail, 457 Houston-street, for a parlor freize and cap in plaster, diploma. W J Hanington, 364 Broadway, for a stained glass church window, figure of St Peter, silver medal. Samuel West, 95 Fourth-avenue, for a likeness in stained glass, silver medal. E R Greenus, 57 Fourth-avenue, for decorations on glass, silver medal. Francis Melville, 142 State-street, Brooklyn, L I, for a crayon drawing,

diploma. Donald McKenzie, corner of Thirty-eighth street and Second-avenue, for pencil, crayon and water color drawings, diploma. W K Hallock, 103 Fourth-avenue, for a colored crayon drawing, diploma. Mrs L B Wight, Springfield, Mass, for crayon drawings, diploma. Agnes McPherson, 67 Christie-street, for a water color drawing, diploma. James W Leveridge, 271 Spring-street, for a pencil drawing, diploma. Louis Bail, 457 Houston-street, for a pencil drawing, diploma. William H Grew, 144 Grand-street, Williamsburg, L I, for a water color drawing, diploma. R J Blakelock, 8 Patchin-place, for a pencil drawing, diploma. Gilbert T Woglom, for a monochromatic drawing, diploma. Lewis Hallock, 103 Fourth-street, for oil paintings, diploma. S Ellis, corner of Murray-street and Broadway, for modelling from a daguerreotype, diploma. Geo W Fordham, 106 Thompson-street, for a monochromatic drawing, diploma. N Lemy, Atlantic-street, Brooklyn, L I, for a plaster statue of Gen Scott, diploma.

FIRE ARMS.

Judges—Joseph Hall, Joseph Rose, Jr, John P Moore.

Allen & Thurber, Worcester, Mass, Onion & Wheelock, agents, 99 Maiden-lane, for the best fowling-pieces, rifles, revolving and self-cocking pistols, gold medal. J B & J Amory, Fond du Lac, Wisconsin, Moore & Baker, agents, 204 Broadway, for the second best rifle, diploma. Marston Fire Arms Manufacturing Co, 36½ Chatham-street, for the best specimens of rifles and pistols, loading at breech, silver medal. Ames Manufacturing Co, Chicopee, Mass, Hitchcock & Co, agents, 116 Broadway, for the best brass cannon, silver medal. Reynolds & Brother, Goodwinville, N Y, for treble case safety fuse for blasting, diploma. Walter Hicks, 47 Dey street, for the best percussion caps, silver medal. Crittenden & Tibbals, South Coventry, Conn, R D Sollace, agent, 19 Cortlandt street, for the second best percussion caps, diploma.

FIRE WORKS.

Judges—John A Bunting, William Ebbitt, Geo S Riggs, William C Arthur.

J G & Isaac Edge, Jersey City, N J, for the best display of fireworks, \$100. J G & Isaac Edge, Jersey City, N J, for the second

best display of fire-works, \$50. Isaac Edge, Sen, Jersey City, N J, for the third best display of fire-works, \$25.

FISHING TACKLE.

Judges—George W Usher, John G Bolen.

J & J C Conroy, 52 Fulton-street, for the best rods and reels, silver medal. J B Crook & Co, 50 Fulton-street, for the second best rods and reels, diploma. Job Johnson, East Brooklyn, L I, for the best fish-hooks, silver medal. John Jones, 80 Hester-street, for the best fishing net, diploma.

GLASS, CHINA AND EARTHENWARE.

Judges—Henry W Haydock, James Neeves, Davis Collamore.

William Oppitz, 136 Nassau-street, for the best engraved glass, (a gold medal having been before awarded,) diploma. Brooklyn Flint Glass Co, 30 South William-street, for the best flint, cut, colored and fancy glass, gold medal. Haughwout & Dailey, 563 Broadway, for the best painting and gilding on china, gold medal. Gottschalk Grelling, 563 Broadway, for the artistic skill displayed on the porcelain vase "nymph at the waterfall," gold medal. Charles Cartlidge & Co, Green Point, L I, for American porcelain, gold medal. P Yearsley, Philadelphia, Pa, J M McCullough, agent, 108 Broad-street, for glass shades and sheet glass, diploma. Woodward, Blakelys & Co, for the best Rockingham ware, (a gold medal having been before awarded,) diploma. W Harrison Brothers, East Liverpool, Ohio, G Harrison, agent, Jersey City, for the second best Rockingham ware, silver medal.

Minor's Works.

Frederick Hoffe, 130 Nassau street, for engraving on glass, Webster's Dictionary. Philip Smith, 61 Frankfort-street, for a good specimen of stained and cut glass, Webster's Dictionary.

GLAZIERS' DIAMONDS.

Judges—S. N. Dodge, D. Jacobus.

E. Karelson, 69 Nassau-street, for glaziers' diamonds and brilliants for engravers, silver medal.

HATS, CAPS, AND FURS.

Judges—Charles St. John, Nathan Starr, Edgar T. Ryder.

John N. Genin, 214 Broadway, for the best moleskin hat, silver medal. F. H. Amidon, 649 Broadway, for the second best moleskin hat, diploma. F. H. Amidon, 649 Broadway, for the best silk riding hat for ladies, silver medal. A Freeman, 90 Fulton-street, for the best soft pearl hat, diploma. John N. Genin, 214 and 513 Broadway, for the best misses' and children's angola and fancy hats, silver medal. A Freeman, 90 Fulton-st., for the second best misses' and children's angola and fancy hats, diploma. John N. Genin, 214 Broadway, for the best navy, army, and fancy caps, silver medal. Francis Landry, 693 Broadway, for the best Russian sable and victorine and muff, silver medal. John N. Genin, 214 and 513 Broadway, for the best Hudson Bay sable victorine and muff, and other furs, and white polar bear skin, silver medal.

STRAW HATS.

Judges—Charles Miles, T. A. Napier, D. K. Granger, J. H. Hills.

D. Thayer, jr., Franklin, Mass., M. Gay, agent, 173 Pearl-st. for the best fine split straw bonnet, silver medal. D. Thayer, jr. Franklin, Mass, M. Gay agent, 173 Pearl-street, for a fancy split straw bonnet, diploma.

GRAINING.

George Clark, E. B. Derby, George Palmer.

Henry Fox, 66 Horatio-street, for the best imitation of marble, silver medal. Patrick Matthews, corner 25th-st. and 7th avenue, for the second best imitaion of marble, diploma. John Grant, Morrisania, N. Y., for the best imitation of oak and other woods, silver medal. William M. Gambling, 273 Sixth avenue, for the second best imitation of oak, diploma.

HEMP.

Judges—Joseph Cowdin, John Travers.

Thomas Hemmingway, Lexington, Ky., John C. McGregor, agent, 134 Pearl-street, for a superior bale of hemp, gold medal.

C. McWay & Son, Williamsburgh, L. I., for superior dressed hemp, silver medal. James M. Hughes, St. Louis, Mo., Hewitt, Lees & Co, agents, 28 Broadway, for excellent samples of Missouri hemp, silver medal. Hall Goshun, Mason county, Missouri, J. O. Sweetser, agent, 103 West-street, for an excellent specimen of hemp, diploma.

INDIA RUBBER GOODS.

Judges—S. W. Smith, James R. Smith.

New-York India Rubber Co., 43 Maiden Lane, for samples of India rubber goods, silver medal. L. P. Porter, 43 Maiden Lane, for superior India rubber canes, silver medal. Goodyear India Rubber Co., Naugatuck, Conn., for India rubber gloves and mittens, diploma. D. Hodgman, 27 Maiden Lane, for India rubber goods, diploma.

JEWELRY.

Judges—M. G. Baldwin, A. G. Peckham, B. W. Clapp.

Roshore & Wood, 4 & 6 Liberty street, for gold lockets, and gold and silver thimbles, of very superior workmanship, gold medal.

LAMPS AND CHANDELIERS.

Judges—W. H. Starr, James Donaldson, John Mitchell.

Cornelius & Co, Philadelphia, Pa, Haughwout & Dailey, agents, 563 Broadway, for the best specimens of chandeliers, &c, displaying much taste and artistic skill, gold medal. Allcock, Allen & Co, 519 Broadway, for the second best specimen of chandeliers, &c, silver medal. William Cooley, Middletown, Conn, E P & D Banning, agents, 21 Mercer street, for fine specimens of lamps, &c, silver medal. D D Miler, 170 Water street, for brass lanterns and trumpets, silver medal. N T Beers, Fulton street, Brooklyn, for an improved street lantern, diploma.

LEATHER.

Judges—A. H. Kimmel, George Evans, William Dymock, H. M. Warren.

Obadiah Ennis, 26 Ferry street, for the best black morocco, diploma. H M Crawford, Philadelphia, Pa, S & W Lumsden, agents,

3 Ferry street, for the best calf skins, gold medal. Waterbury Leather Manufacturing Co, George Brown, agent, 38 Spruce street, for the best colored and bronze morocco and calf skins for suspenders, silver medal. A H Brahe, 27 Ferry street, for the best oak sole leather, silver medal. Ely & Keese, 22 Ferry street, for the second best oak tanned sole leather, diploma. Hurley & Miles, 80 Gold street, for the second best oak and hemlock tanned sole leather, diploma. Levi Shepard & Sons, Norfolk, Conn, H Rice, agent, 58 Spruce street, for the best bark tanned skivers, diploma. David Moffat, 5 Jacob street, for the best black russet bridle leather, silver medal. T Scott & Sons, 3 Jacob street, for the best russet leather, diploma. John H Bowie & Co, 25 Ferry street, for the best leather hose pipe and fire buckets, a gold medal having been before awarded, diploma. Joseph Rogers, Jr. Danbury, Ct, for the best parchment for drum heads, diploma.

LOCKS, &c.

Judges—Theophilus Culp, Samuel Boyd.

W & E T Fitch, New Haven, Conn, for superior cabinet locks and extension centre bits, gold medal. Jas Kyle, 561 Hudson st, for specimens of locks, diploma. Blake Brothers, Chester, Conn, D C Ackerman, agent, 14 Platt street, for samples of butts, diploma.

BANK LOCKS.

Judges—T. B Stillman, S. D. Tucker.

J H. Butterworth & Co, Dover, N J, for the best bank locks, gold medal. Murphy & Butler, 87 Elizabeth street, for a changeable powder proof bank lock, silver medal. E C Goffin, 62 Cannon street, for a bank lock, silver medal.

MACHINES, MODELS AND INVENTIONS.

Judges—Isaac W. Ayres, A. B Taylor, Jas. Bogardus.

Hewes & Phillip, Newark, N J, for a 25 horse power steam engine, gold medal. Wm. Vine, Jr, Hartford, Conn, for a gold-beating machine, gold medal. S T McDougall, 258 Pearl street, for a platform scale, improved arrangement in weights, gold medal. Blake & Johnson, Waterbury, Conn, J V D Wyckoff, agent, 152 Broadway, for improved cast steel geared rollers, gold medal. F Harris & Sons, Elizabethtown, N J, for a smut machine, a gold medal

having been before awarded, diploma. H H Green, 128 Fulton street, for a type casting machine, silver medal. Wm Gee, 66 Gold street, for a bottling machine, silver medal. John Tremper, Buffalo, N Y, for a steam valve, silver medal. G. Snyder, Rhinebeck, N Y, John Bullock, 208 Broadway, agent, for a model of a hay press, diploma. John H. Vonderleigh, 480 Cherry street, for a brass screw wrench and screw brace, diploma. Duncan & West, 51 Beekman street, for mangling machines, a silver medal having been before awarded, diploma.

I M Singer & Co, 285 Broadway, for the best sewing machine, (a gold medal having been before awarded,) diploma. John W Cochran, Williamsburgh, L I, for the best quartz crusher, gold medal. Sloan & Leggett, corner of Lexington-avenue and Thirtieth-street, for regulating water in the steam boiler, gold medal. Joseph Pine, 119 Walker-street, for the running gear on fire engine, gold medal. Adirondac Steel Co, Jersey City, N J, for the best American steel, (a gold medal having been before awarded,) diploma. Ari Davis, Boston, Mass, for a dovetailing machine, gold medal. A C Powell, Syracuse, N Y, for a machine for cutting bolts, &c, gold medal. G P Gordon, 138 Fulton-street, for a card press, gold medal. Junius Judson, Rochester, N Y, for a governor valve, silver medal. E & T Fairbanks, St Johnsbury, Vt, for hay, depot, and rolling mill scales, silver medal. P G Gardiner, 10 Wall-street, for a superior car axle, silver medal. S Perry, E Goddard, agent, 24 Bowery, for a paper manufacturer's cutting machine, silver medal. Ezra Gould, Newark, N J, for good workmanship on slide lathe and gear cutter, silver medal. Brown & White, Windsor Locks, Conn, for an engine lathe for turning and boring conical shapes, silver medal. A W Metcalf, 144 Centre-street, for steam whistles, silver medal. Child & Tainter, Worcester, Mass, for a planing machine, silver medal. Thos Prosser & Son, 22 Platt-street, for boilermakers' tools, silver medal. John A Collins, 208 Broadway, for a quartz crusher, silver medal. Andrew P Scott, Forty-third street, near Eighth-avenue, for a drilling machine, diploma. F. Van Dorn, Somerset, N J, for a mill train, diploma. D & N Saunders, Hopkinson, R I, for screws, diploma. William B Leonard 75 Merchants' Exchange, for a hydraulic metre, diploma. H Berdan, for a quartz

crusher, diploma. Wilson Wright, 97 Forsyth-street, for a jack screw, diploma. Windell Wright, 290 West Nineteenth-street, for a friction clutch, diploma. Stillman, Allen & Co, Novelty Works, for gauges, diploma. B Brundred, Son & Co, Oldham, near Paterson, N J, for a cotton throstle, gold medal. B Kreischer, 58 Goerck-street, for superior fire bricks, gold medal. J & W McAdams, Boston, Mass, for a paging machine, gold medal. J T Foster, 47 Dey street, for a machine for picking up stones, silver medal. E H Ashcroft, Boston, Mass, for a steam gauge, silver medal. B H Otis, Binghamton, N Y, for a morticing, boring, and drilling machine, silver medal. Edward Harrison, New Haven, Conn, for a flour mill, (a gold medal having been before awarded,) diploma. Olcott & Bros, Rochester, N Y, for locomotive lamps, (a silver medal having been before awarded,) diploma. Baldwin & Cunningham, Nashua, N H, for a boring machine for cylinders, silver medal. H Boardman, Plattsburgh, N Y, and 123 Fulton-street, N Y, for a steam boiler, silver medal. C & G W Woodward, 77 Beekman-street, for a steam valve, silver medal. R Dudgeon, E Lyons, agent, 466 Grand-street, for hydraulic jacks, silver medal. Union Power Co, 49 Dey-street, for a centrifugal pump, good for low lifts, silver medal. Jos Echols, American Hotel, for a pneumatic pump, silver medal. S Ingersoll, 114 Avenue C, for a pall wrench, silver medal. J L White, Corning, N Y, for a locomotive truck, silver medal. Lewis Bollman, 62 Beach-street, for a lathe for conical work, silver medal. R W Parker, Roxbury, Mass, for a method of banding pullies, silver medal. Samuel Hall, 129 Amos-street, for bolts, nuts and washers, silver medal. Wm H Lazelle, 220 Centre-street, for the best apple peeler, silver medal. Thurston, Greene & Co, Providence, R I, for a hydraulic governor for steam engines, silver medal. E Oliver, 4 Jefferson-street, for a rat trap, diploma. E Stebbins, Chicopee, Mass, for faucets, diploma. J Ball & Co, corner Centre and Reed streets, for water pipe, diploma. G J Wright, 290 West Nineteenth street, for a condenser for drawing wool and other fibres, diploma. Steele, Burrige & Stannard, Jersey City, for a planing machine for iron, diploma. H S Hyde, Troy, New-York, for a railroad locomotive truck, diploma. H F Patton, for a machine for splitting morocco, diploma. G G

Sheppard, 187 Water-street, for scales, diploma. James St. John, 97 Forsyth-street, for jack screws, diploma. M Devol, 55 avenue D, for a small engine and boiler, diploma. Victor Giroud, 526 12th-street, small engine and boiler, diploma. J T Bruen, Hastings, Westchester co., N Y, H H Hedges, agent, 64 Duane-street, for a new mode of hanging and guiding saws for sawing stone, silver medal. J T Bruen, Hastings, Westchester co, N Y, H H Hedges, agent, 64 Duane-street, for a cylindrical cutter, silver medal. E Davies, Trenton, N J, for fire brick, diploma. Bates, Hide & Co, Bridgewater, Ct, for a cotton gin, diploma. Tal-lafero & Cummings, Maysville, Ky, N D Hunter, agent, 398 Broadway, patent heating smoothing-iron, diploma. J B Holmes, 47 Dey-street, for a capstan, diploma. G Pollock, 23 Centre-street, for a lift and force pump, diploma. S W & R M Draper, W B Cummings, agent, Kingsboro', Mass, for a mill pick, diploma. A L Phillips & Co, Chester, Mass, for a fulling mill, diploma. T Sharp, Chatham Four Corners, N Y, for a horse power, diploma. J A Bragaw, Hartford, Ct, for a screw wrench, diploma. Union Power Co, 49 Dey-street, for an oscillating pump, diploma. A Hutchinson, 108 Wall-street, for a model of engine and propeller, diploma. W. C. Van Housen, Leeds, Greene co., N. Y, for a balance gate, diploma. Stephen E. Parrish, 15 Canal-street, for a floor clamp, diploma. Henry Underwood, Tolland, Ct, for a machine for scarfing and splitting leather, diploma. Townsend Duryea, 140 Grand-street, Williamsburgh, for a machine for polishing daguerreotypes, diploma. Rees & Hoyt, 37 Spruce-street, for leather belting, driving machinery in machine room, (a gold medal having been before awarded) diploma. F M Ray, 104 Broadway, for India rubber car springs, (a gold medal having been before awarded) diploma. Paul Stillman, Novelty Works, for a register steam gauge, silver medal.

Minors' Works.

E H Smith, 258 Pearl-street, for a brad and shoe nail machine, Webster's Dictionary.

SPECIAL.

Steam Condenser.

Judges—J W Ayres, James Renwick, H R Dunham, Horatio Allen.

Joseph P Pierson, 5 Wall-street, for double vacuum steam condenser, gold medal.

Sub-marine Boat

L. Alexander, 16 Broadway, for a sub-marine boat, gold medal.

Stone-dressing and Polishing Machines.

Judges—Joseph Cowdin, John A Bunting, Edwin Smith.

Charles Wilson, Springfield, Mass, for a superior stone-dressing machine, gold medal. Albert Eames, Springfield, Mass, for the best polishing machine, gold medal.

Iron Roofing.

Judges—Edwin Smith, John A Bunting, B Aycrigg.

Bogardus & Hoppin, cor. Centre and Duane streets, for a beautiful and light constructed iron roof, silver medal.

Gas Burner.

Judges—Wm C Arthur, Thos Carter.

Wm Mallerd, Lowell, Mass, for an anti-corrosive gas burner, silver medal.

Discretionary.

Jacob Grosvenor, N Y, for a good hay press, diploma. James Rodgers, N Y, for a register for measuring the revolutions of a steam engine, silver medal. J Laidlaw, west 24th-street, near 10th avenue, for a protector gas metre, silver medal. Napoleon Hayman, 59 Marion-street for bells and bell materials, diploma. A W Cary, Brockport N Y, for a centrifugal pump, (a gold medal having been before awarded) diploma. J B Gridley, N Y, for a good bridge, diploma. Allen & Wells, N Y, for a cut-off, gold medal. J D B Stillman, N Y, for an improved harpoon, silver medal. Pierce & Valentine, 122 Water-street, for a superior safe, gold medal. T D Jackson, 65 Nassau-street, for a superior annunciator, (a gold medal having been before awarded) diploma.

Minors' Work.

Alex C Heckert, Williamsburgh, L I, for a working model of a steam engine, Webster's Dictionary.

MANUFACTURERS' ARTICLES—WEAVERS' REEDS, ETC.

Judges—Alex Knox, P A Leonard, C. W. Crosley.

J A Gowdey & Son, Providence, R I, for superior weavers' reeds, gold medal. A D Williams, Utica, N Y, Andrews & Jessup, agents, 70 Pine-street, for the best wire harness, silver medal.

MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS.

Judges—Aaron Rand, Daniel Pike, Wm. H. Ellet.

James Prentice, 315 Broadway, for the best mathematical instruments, gold medal. Fehrens & Albrecht, 139 Nassau-street, for the second best mathematical instruments, silver medal. Genert & Holzke, 25 Maiden-lane, for the third best mathematical instruments, diploma. Chas Copley, 159 Atlantic-street, Brooklyn, for fine specimens of globes, gold medal. Wm. Norton, 40 Fulton-street, for good thermometers, silver medal. P J Sherman, 158 William-street, for simple and convenient spirit levels, silver medal. Henry Fitz, 237 Fifth-street, for the best acromatic telescope; a gold medal having been before awarded; diploma. A Derne, 367 Pearl-street, for good spy and opera glasses, silver medal. Ira S. Bullard, Geneva, N Y, for a good barometer, diploma. Dr Kinnie, I & L Houghton, agents, 38 Cedar-street, for a good electric machine, diploma. Louis Dresches, 25 Division-street, for a good electric machine, diploma. M Chichester, 109 Wall-street, for a wantage tube, diploma. G C Weesman, 11 Spruce-street, for an excellent ship-carpenter's gauge, silver medal.

Minors' Work.

B D F Wells, 237 Fifth-street, for an acromatic telescope, Appleton's Mechanics' Dictionary.

MUSICAL INSTRUMENTS.

Judges—Wm L Bloomfield, Warren Hill, T S Shepherd.

A G Badger, 131 Broadway, for the best diatonic and beohm flute, silver medal. J Jacobs, 100 Chatham-street, for the best tamborine and banjo, diploma. Jacob Cohen, 26 West Broadway, for the second best banjo, diploma. Jasper Godone, 403 Broadway, for superior music stands, diploma.

NAVAL ARCHITECTURE.

Judges—Wm Skiddy, Edward K Collins, C Vanderbilt.

D D Westervelt, Seventh-street, East river, for the best model of a pilot boat, silver medal. Robert Underhill, 235 East Broadway, for a model of a yacht, diploma.

NEEDLEWORK, EMBROIDERY AND FANCY ARTICLES.

Judges—Mrs James R Smith, Miss A A Smith, Miss M Hamilton, Mrs C M French.

Mrs Stonehill, 7 Division-street, for the best case of ladies' bonnets, silver medal. Mrs Wm Simmons, 564, Broadway, for the second best case of ladies' bonnets, diploma. Mrs Lyon Isaac, 5 Division-street, for the third best case of ladies' bonnets, diploma. Miss Laura B Hazen, 220 Third-avenue, for a paper bonnet and trimming, for originality and ingenuity, diploma. Miss Julia J Marcet, 94 Orchard street, for beautiful floss silk embroidery, silver medal. Jane F Marshall, 67, Greenwich street, for the best twisted silk embroidery, diploma. Jas Schiess, 134 Spring street, for a beautiful embroidered cambric handkerchief, silver medal. Ximania Hains, 123 West Twenty-eighth-street, for a black merino shawl, embroidered to imitate fine cashmere, silver cup or \$10. H H Easterbrook, Bristol, R I, for the best worsted embroidery (picture of Washington), silver medal. Abigail S Howell, 698 Washington street, for the second best worsted work, diploma. Mary O'Connor, corner Summit and Columbia-streets, Brooklyn, for the third best worsted work, diploma. Miss Harmon, 12 Bond-street, for worsted embroidery, diploma.

Mrs Letitia Price, 216 Columbia street, Brooklyn, L I, for an embroidered chair, the best landseape pattern, silver medal. Sisters of Charity, Syracuse, for an embroidered chair, diploma. Mrs Anna Stein, 189 Bowery, for a splendid piece of raised embroidery, copied from nature, silver medal. Miss Blish, Delaware co, N J, for the second best raised embroidery, excellent piece, well done, diploma. Mrs J Wild, 109 Division street, for the third best raised embroidery, diploma. Miss M Hamilton, 12 Vandam street, for the best bullion embroidery, silver medal. Miss A E Buys, 263 Atlantic street, Brooklyn, L I, for the second best bullion work

diploma. Misses Joel, 138 MacDougal street, for the best specimens of crochet work, silver medal. Miss H L Gilchrist, Charlestown, N H, for the second best crochet work, diploma. C Linherr, 293 Broadway, for the best hair work, silver medal. Robert Link & Brother, 181 Broadway, for excellent hair work, silver medal. Mrs Sarah A Reed, 8 Leroy street, for the best hair embroidery and chenille work, silver medal. Miss Adah Peter, Syracuse, N Y, for the second best chenille work, diploma. Chas Schikinger, 2 Rutger street, for a case of artificial flowers, diploma. Mrs E Nott, 349 Hudson street, for the best basket of paper flowers, and best wax fruit, silver medal. Mrs Van Skeeline, 381 Broadway, for the second best paper flowers, diploma. W C Hickman, 44 Madison street, for the best shell flowers, diploma. Eliza Smith, Brooklyn, L I, for the second best shell flowers, diploma. Miss E Harris, 14 Bergen street, Brooklyn, L I, for the best wax flowers, diploma. Mrs Morris, 89 Second street, for second best wax flowers, diploma. Miss E Harris, 14 Bergen street, Brooklyn, L I, for the second best wax fruit, diploma. E E Webber, 136 East 21st street, for two elegant workboxes, silver medal. Miss Adeline Gardner, 189 East 85th street, for a fancy box and frame made of leather, diploma. John N Genin, 214 and 516 Broadway, for a case of fancy embroidered articles for children, gold medal.

Quilts.

Mrs Francis Hunt, 25 Hester street, for the best quilt, diploma. Mrs Foster, Williamsburg, L I, for a quilt, diploma. Lucinda Stinson, Williamsburg, L I, for a quilt, diploma. Emily Merrill, 276 Grand street, for the best knit spread, diploma. Mrs Miles Cook, 104 Bridge street, Brooklyn, L I, for a knit spread, diploma. Miss N W Purdy, Rye, N Y, for a white quilt, superior workmanship, silver medal. Mrs Rosina Farrington, 114 Leroy street, for a quilt, diploma.

Minor's Work.

Second Ward School, Williamsburg, L I, for a case of fancy work, Webster's Dictionary. Mary A Wangler, 317 Second avenue, for embroidery on perforated paper, Handbook of Needlework.

PAPER HANGINGS, UPHOLSTERY, &c.

Judges.—J L Gratacap, Geo A Curtis, John W Miller.

Greaves Power, Brooklyn, L I, for the best varnished marble paper hangings, silver medal. James Fackrell & Son, Plainfield, N J, for the best oak and marble paper hangings, silver medal. Robert Graves, Brooklyn, L I, for the second best oak and marble paper hangings, diploma. John Waters, Fulton street, Brooklyn, L I, for the best spring mattress, silver medal. Philip Neppard, 62 Vesey street, for the second best spring mattress, diploma. De-meure Mauritz & Chatain, 53 Centre street, for the best spring bed bottom, silver medal. Institution for the Blind, 8th avenue, E Johnson, agent, for a well made hair mattress and cushion, silver medal. Alfred R Philips, 58 Sullivan street, for a beautiful specimen of work in hanging paper, silver medal. Eustace & Ebert, 189 Pearl street, for flocks for paper hanging manufacturers, silver medal. Edward Dixon, 26 West 14th street, for superior curled hair and hair seating, silver medal.

PENMANSHIP AND GOLD PENS.

Judges.—W M V Williamson, Hiram Dixon, A B Clarke.

D F Brown, 64 Court street, Brooklyn, L I, for the best specimens of off-hand commercial and ornamental penmanship, silver medal. W A Dunlop, New Orleans, La, for the best specimens of pen drawing, diploma. David Stanton, 39 Hester-street, for very superior specimens of off-hand penmanship, diploma. Spencer & Rendell, 2 Maiden-lane, for the best specimens of gold pens; gold medal having been before awarded, diploma.

PIANO-FORTES.

Judges.—William Vincent Wallace, John Pychowski, Henry C Watson.

Firth, Pond & Co, 1 Franklin-square, for an iron frame piano, silver medal. Charles J Holder, 188 Spring-street, for a piano-forte, silver medal. Geo Hews & Co, Boston, N P B Curtis, agent, 447 Broadway, for a piano-forte, diploma. T Gilbert & Co, Boston, Mass, Horace Waters, agent, 333 Broadway, for an Æolian attachment, diploma. H B Horton & Co, Akron, Ohio, for a me-

lodeon, silver medal. E D Warren, Boston, Mass, for a reed organ, pedal notes, fine, silver medal.

PREP. OF NATURAL HISTORY.

John G Bell, 289 Broadway, for a superior case of stuffed birds, silver medal.

SADDLERY, HARNESS, AND WHIPS.

Judges—John B Bull, Robert R Story, P Trainor.

Joseph Hawley, Newark, N J, for covered harness furniture, silver medal. C P Caldwell, 170 Pearl-street, for a superior case of whips, gold medal.

SHAWLS AND MOUSSELINE DE LAINES.

L W Duncan, Franklin, Essex county, N J, William Watson & Co, agents, 43 Exchange-place, for the best printed wool shawls, silver medal. Hamilton Woolen Company, Merriam, Brewer & Co, agents, 34 Broad-street, N Y, and 25 Federal-street, Boston, for the best printed de laines and cashmeres, gold medal. Wakefield Mills, Germantown, Pa, G W Carlston, agent, 43 Cedar-st, for the best woolen scarfs, silver medal. Duncan & Cunningham, Franklin, N J, A H McCurdy, agent, 30 Broad-street, for printed and embroidered long shawls, silver medal. Duncan & Co, Franklin, N J, William Watson & Co, agents, 43 Exchange place, for printed and embroidered long shawls, silver medal. Jas Roy & Co, Watervliet, N Y, Hoyt, Tillinghast & Co, agents, 54 and 56 Broad-street, for the best plaid long shawls, silver medal. L W Duncan, Franklin, N J, C W Mallard, agent, 77 Pine street, for the second best printed wool shawls, diploma. Utica Globe Mills, N Y, Hoyt, Tillinghast & Co, agents, 54 and 56 Broad-street, for printed wool shawls, diploma. F J Mabbett, Jr, 77 Cedar-street, for Sontag scarfs, diploma. B M Wild, New Brighton, Pa, for embroidered woolen shawls, diploma.

SHIRTS.

Mrs R Van Houten, 83 Nassau-street, for the best shirt, silver medal. J Agate, 256 Broadway, for the second best shirt, diploma.

SIGN PAINTING.

Judges—C D Couenhoven, George W Fordham, Alex Brandon.

Hale & Co, 80 Nassau-street, for the best writing and enameling on glass, gold medal. Arthur T White, 147 Grand-street, for the best sign lettering, diploma. Cramer & Christie, 50 Centre-street, for the second best sign lettering, diploma.

Minor's work.

Wm McCully, 86 Fulton-street, Brooklyn, L I, for the best sign lettering, Webster's Dictionary. John G Quick, Brooklyn, L I, for the second best sign lettering, Webster's Dictionary. J H Van Norden, 118 Bedford-street, for the best ornamental sign, Webster's Dictionary.

RAW AND MANUFACTURED SILK.

Raw Silk.

Judges—Geo M Haywood, John W Chambers.

Miss Harriet Summy, Manheim, Pa., for the best twenty pounds of reeled silk, Van Schaick premium of \$10 and a bronze medal. Miss Harriet Summy, Manheim, Pa, for the best bushel of Paphos cocoons, Van Schaick premium of \$5 and a bronze medal. Miss Harriet Summy, Manheim, Pa, for the best bushel of peanut cocoons. Van Schaick premium of \$5 and a bronze medal.

Manufactured Silks.

Judges—A M Cameron, James Myers.

John Ryle, Paterson, N J, for a beautiful specimen of sewing silk, silver medal. John Ryle, Paterson, N J, for the best printed silk handkerchiefs, silver medal. Shepherd & Howe, 36 Pine-st, for the second best printed silk handkerchief, diploma. Newport Silk Manufacturing Company, Newport, Ky, W T Jennings & Co, agents, 223 Broadway, for superior silk vestings, silver medal.

SILVER PLATING.

Judges—Ralph J Anderton, John Jones.

Jackson & Miller, South Sixth-street, Williamsburgh, L I, for plating on door knobs, diploma. Windle & Co, 56 Maiden-lane, for the best electro plated castors and tea setts, silver medal.

Ames Manufacturing Company, Chicopee, Mass, Hitchcock & Co, agents, 116 Broadway, for the second best electro plated castors and tea setts, diploma.

Minors' Works.

Aaron Watson, 38 White-street, for superior plating on door knobs, Webster's Dictionary. Geo. Self, 38 White-street, for superior plating on door knobs, Webster's Dictionary.

SILVER WARE.

Judges—Peter Van Ness, Wm Adams, J W Hughes.

James S Vancourt & Co, 83 Duane-street, for superior silver ware, silver medal. Albert Coles & Co, 6 Liberty-place, for superior silver ware, silver medal.

Minor's Work.

L H Lent, 62 Butler-street, Brooklyn, L I, for a silver trumpet and cap, Webster's Dictionary.

STATIONERY AND PRINTING.

Judges—Geo C Morgan, Geo F Nesbitt, H Jeroliman.

Samuel Taylor, Easton, Pa, for superior slates, diploma. S Spooner, 16 Greenwich-street, for superior typography, Boydell's Shakspeare, silver medal. Laflin, Brothers, Herkimer, N Y, Bassett, Aborn & Motley, agents, 35 Park Row, for admirable specimens of blue and cream laid 4to post paper, gold medal. Chas. Watson, Brooklyn, L I, for the best adhesive gum, silver medal, J Wilson, Brooklyn, Nathan Lane & Co, agents, 69 Wall-street. for the second best liquid gum, diploma. J & W McAdams, Boston, Mass, for a pen lifter for ruling account books, silver medal. Chas Williams, Goldsmith's Hall, Philadelphia, Pa, for the best marble paper, diploma. John L Salisbury, 53 Liberty-street, for labels for manufacturers, diploma. Stephen E Parrish, Canal street, E B Clayton & Sons, agents, 161 Pearl street, for the best seal and copying presses and stands, gold medal. Francis & Lou-trell, 77 Maiden-lane, for the second best copying presses, diploma. H H Green, 123 Fulton-street, for specimens of book type, diploma. J & W McAdams, Boston, Mass for elaborate speci-

mens of blank book ruling, silver medal. A Demarest, No 1 Pine street, for the best seals and envelopes, diploma. J O Flynn, 100 Nassau-street, for illuminated envelopes, diploma. Hamilton & Co, 15 St Peter's-place, for specimens of card printing, diploma.

STOVES, FURNACES, GRATES AND RANGES.

Cooking Stoves and Ranges.

Judges—Joseph P Simpson, C Rikeman.

John T Budd, 6 Horatio street, for the best range, silver medal. Chilson, Richardson & Co, 374 Broadway, for the second best range, diploma. T Southard, 233 Water street, for the best coal cooking stoves, silver medal. Warren, Sweetland & Co, Crescent, Saratoga county, N Y, for the second best coal cooking stove, diploma. A C Barston, Providence, R I, for the best wood cooking stove, silver medal. Dutee, Arnold & Co, Providence, R I, for the second best wood cooking stove, diploma.

Stoves for Warming, and Hot Air Furnaces.

Judges—John Hecker, Hiram A Norris, Horatio D Sheppard.

D Culver, 52 Cliff street, for the best hot air furnace, gold medal. Chilson, Richardson & Co, 374 Broadway, for the second best hot air furnace, silver medal. Bliss & Langley, 239 Water-street, for the third best hot air furnace, diploma. J M Thatcher, 211 Water street, for the best portable hot air furnace, silver medal. N A Boynton, Boston, Mass, Chilson, Richardson & Co, agents, 374 Broadway, for the second best portable hot air furnace, diploma. Gardner Chilson, Boston, Mass, Chilson, Richardson & Co, agents, 374 Broadway, for the third best portable hot air furnace, diploma. Warren, Sweetland & Co, Crescent, Saratoga county, N Y, Hopkins, Duff & Butler, agents, 235 Water-street, for the best parlor stove, silver medal. Wm Quinyer, 59 and 61 avenue C, for a porcelain stove, diploma. Joseph D Andrews, 210 Water street, for the best hall and office stoves, silver medal. Chilson, Richardson & Co, for the second best hall and office stove, diploma. D Culver, 52 Cliff-street, for an extensive display of plain and ornamental registers, and a pedestal register,

silver medal. Chilson, Richardson & Co, 374 Broadway, for elegant enamelled, polished, and japanned registers, diploma.

GRATES.

Judges.—Jordan L Mott, James R Walter.

W & N Jackson & Sons, 238 Front-street and 891 Broadway, for the best grates, gold medal.

SURGICAL INSTRUMENTS.

Judges.—D M Reese, M D, C R Gilman, M D, J M Carnochan, M. D.

J M Sanderson, 3 Barclay-street, for the best truss, gold medal. Palmer & Co, Springfield, Mass, for the best artificial leg ; a gold medal having been before awarded, diploma. Nicholay & Faber, 66 Lispenard-street, for an artificial leg, for its aptitude and economy, and adapted to the poor, silver medal. Wm C Stone & Co, 201 Washington-street, Boston, Mass, for the second best artificial leg, silver medal. John S Drake, 10 46th street, for the third best artificial leg, diploma. Benj. Welch, Salisbury, Conn, Rush-ton & Clark, agents, 277 Broadway, for splints, &c, silver medal. Wm S Thomas, Norwich, Chenango co, N Y, J Bartlett, agent, 71 Nassau-street, for meritorious cupping instruments, diploma.

TRUNKS AND CARPET BAGS.

Judges.—J Johnson, John Black.

P Trainor, 378 Broadway, for the best travelling trunks, silver medal. John Belgrame, 234 Church-street, for the 2d best travelling trunk, diploma.

TOBACCO.

Judges.—Jas R Smith, Wm Ebbitt.

Simeon B Williams, Cincinnati, Ohio, for excellent chewing tobacco, diploma.

WIGS.

Judges.—Wm Dibblee, Julien Pierron, Frederick Gibbins, J A Pazzoni.

MINOR'S WORK.

John Mooney, 439 for a wig, a fine piece of work, Webster's Dictionary.

WOOD TURNING.

Judges.—Saml. Shardlow, Francis Wolff.

Mead & Pope, 41 Hester-street, for a stove pattern, silver medal.
Wm Gardner, 19 Canal-street, for a superior specimen of oval turning, silver medal. J H Doughty, 387 Grand-street, for a specimen of turning, diploma.

WOOLEN GOODS.

Judges.—Henry Sheldon, J W Corlies, W H Scofield, Jas B Parsons.

Vassalboro' co, Vassalboro', Francis Skinner & Co, agents, for the best black cassimere, gold medal. Alpheus Morse, Eaton N Y, John Slade & Co, agents, 18 Broad-street, for the second best black cassimere, silver medal. Millville Manufacturing Co, L S Bush & Co, agents, 32 Broad-street, for the best fancy cassimeres, gold medal. Edward Seagrave, Blackstone, Mass, McCurdy, Aldrich & Spencer, agents, 30 Broad-street for the second best fancy cassimeres, silver medal.

Evans & Seagrave, Blackstone, Mass, McCurdy, Aldrich & Spencer, agents, 30 Broad street, for the third best fancy cassimeres, diploma. Hockanum Co, Rockville, Conn, Willard & Wood, agents, 40 and 42 Broad street, for the best black satinnet, gold medal. L Bassett & Co, Lee, Mass, Willard & Wood, agents, 40 and 42 Broad street, for the 2d best satinnet, silver medal. Chapin & Root, Albany, N. Y., Bowers & Beeckman, agents, 33 Broad street, for the third best satinnet, diploma. Dexter Manufacturing Co, Pleasant Valley, John Slade & Co, agents, 13 Broad street, for the best Beaver cloth, gold medal. Oriskany Manufacturing Co, Oriskany, N. Y., John Slade & Co, agents, 13 Broad street, for the second best beaver cloth, silver medal. Grenville Co, Grenville, Conn, S L Bush, & Co, agents, 32 Broad street, for the best felt beaver cloth, gold medal. Trumbull, Bloodgood & Co, Essex, N J, Hoyt, Tillinghast & Co, agents, 54 Broad street, for the second best beaver cloth, silver medal. Auburn Woolen Co, Auburn, N Y, Bowers & Beeckman, agents, 33 Broad street, for black cloth, silver medal. G L Harding, Mass, Francis Skinner & Co, 39 Broad street, for doe skin cassimeres, gold medal. S Blackington, North Adams, Mass, McCurdy, Aldrich & Spencer, agents, 30 Broad street, for union cassimeres, diploma. Haile & Todd

Hillsdale, N H, McGregor, Timpson & Co, agents, 47 Broad street, for cashmerettes, silver medal. Black Woolen Co, Waretown, N Y, Bowers & Beeckman, agents, 33 Broad street, for sheep's gray cassimeres, diploma. Mystic Co, Mystic, Conn, Willard & Woods, agents, 40 Broad street, for colored merino cloth, gold medal. Ballard Vale Co, Andover, Mass, John Slade & Co, agents, 13 Broad street, for the best silk warp flannel, gold medal. G H Gilbert, Ware, Mass, Dale & Wright, agents, 24 Broad street, for the second best warp flannel, silver medal. C A Stevens, Ware, Mass, Dale & Wright, agents, 24 Broad street, for the best white flannel, gold medal. G H Gilbert, Ware, Mass, Dale & Wright, agents, 24 Broad street, for the 2d best white flannel, silver medal. Rochdale Mills, Rochester, N H, Nesmith & Co, agents, 52 Broad street, for superior woolen blankets, gold medal. Salisbury Manufacturing Co, Salisbury, Conn, John Slade & Co, agents, 13 Broad street, for silk warp tweed, gold medal. Dorastus Kellogg, Skaneateles, N Y, Bowers & Beeckman, agents, 33 Broad street, for tweed, silver medal. O W Gardner, Boston, Mass, for woolen yarn, silver medal. J J Hinchmann, & Co, 53 Cedar street, for the best woolen hosiery, silver medal.

MISCELLANEOUS.

Judges—Jas R Smith, Wm Hall, Wm Ebbitt, B Ayerigg, Jos. Cowdin, Edwin Smith, J A Bunting.

Lois Lucet, 67 Canal street, for a specimen of bronzing, a silver medal having been before awarded, diploma. Alex Young, 41st street, between 2d and 3d avenues, for the best ornamental terra cotta, a gold medal having been before awarded, diploma. Edward Roche, West 12th street, between 9th and 10th avenues, for 2d best ornamental terra cotta, silver medal. Ambrose Tellier, cor 54th street and 3d avenue, for terra cotta statuary, diploma. Wm Webb, 31 Allen street, for the best candle moulds, silver medal. Farr & Briggs, 30 Rector street, for the second best candle moulds, diploma. Zelotis Dickenson, 94 Wall street, for specimens of oil stone, silver medal. C H Platts, 20 Willow Place, Brooklyn, L I, for patent blocks, silver medal. John Dick, 209 Centre street, for an oak carved frame, diploma. R Seybold, 293 Rivington street, for an alarm money drawer, diploma. G W Gorum, 163 Water street, for the best enameled cloth, silver me-

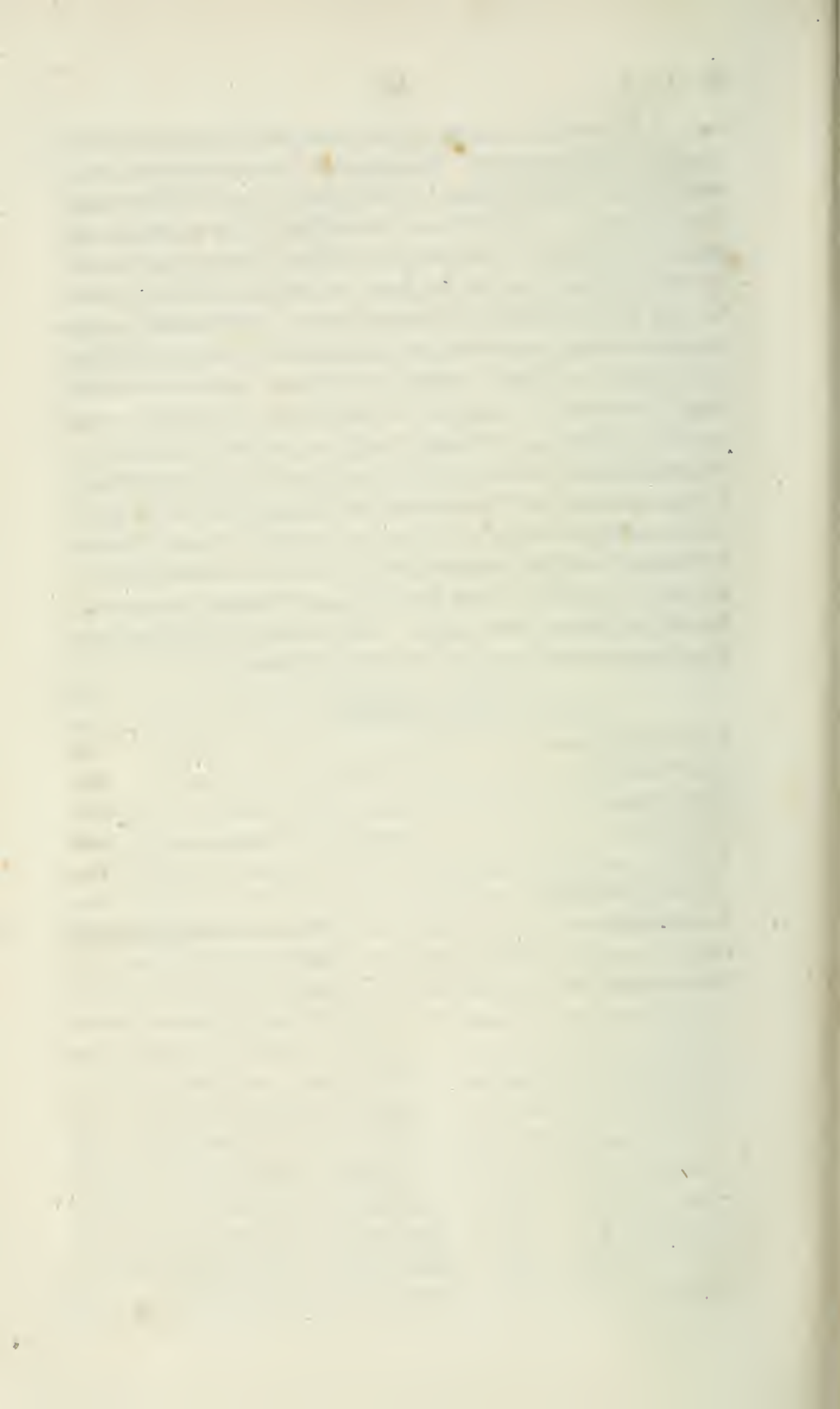
dal. R Wanmaker, Lodi, N J, for the second best enameled cloth, diploma. R Montgomery, Hempstead, L I, for a coil of hide rope, silver medal. H Goldsmith, 311 Broadway, for a portable water closet, diploma. John E Purser, Brooklyn, L I, for a wreck life preserver, diploma. Putnam Hose Co, New York, for a hose cart, diploma. Engine Co. No. 32, for a fire engine, diploma. Lee & Co, 309 Bleecker street, for superior gauze window shades, a silver medal having been before awarded, diploma. Black & Gramm, corner Canal and Centre streets, for German silver gilt mouldings, silver medal. Abner Reed, New York, for a guide to penmanship, diploma. J B Hyde, Stapleton, S I, G O Jones, agent, 162 Fulton street, for Person's pocket medal calendar, diploma. L Brandeis & Co, 11 Cedar street, for bronze powder, diploma. J Lane, 191 6th avenue, for a fireman's certificate frame, diploma. C Cable & Sons, Poughkeepsie, N Y, for soda and mineral waters, diploma. American Union Boot, Shoe and Leather Manufacturing Co, for brogans, silver medal. Montgomery Queen, Brooklyn for a large and well arranged omnibus, diploma.

TOTAL PREMIUMS.

Gold medals,	90
Silver medals,	320
Silver cups,	121
Diplomas,	335
Books,	174

Cash premiums:

Van Schaick,	\$20, and 3 bronze medals.
Cattle,	48
Fireworks,	175



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1852

American Institute of the
City of New York
Annual report

ENGINE STORAGE

Engin
Serials

